

FORECASTING STOCK MARKET TRENDS



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FORECASTING STOCK MARKET TRENDS

BY

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To M.A.S.

Preface

THE problem of how best to profit by the major swings of security prices is usually approached in two very distinct ways. One method of trading concerns itself only with the study of individual stocks. Traders who follow this system pay little attention to the broad swings of security prices, but govern their dealings by conclusions reached through analyses of conditions affecting individual companies' stocks. Another method of trading consists of following the indications provided by a study of the commercial, industrial, and financial conditions in their relation to the trend of general stock prices.

The difficulties involved in a comprehensive analysis of general conditions have led many investors to choose the simpler method; that is, to follow the condition of a few stocks, ignoring the general trend of stock prices, and hoping that those stocks selected for investment will appreciate in value more than the average stock.

The writing of this book was undertaken with the belief that such a method, although essentially sound and undoubtedly profitable from the long range viewpoint, did not take full advantage of the facilities now at everyone's disposal with which it is possible to profit financially by the ebb and flow of the entire stock market. To be sure, the selection of any stock must be preceded by a careful analysis of balance sheets and general conditions within the particular industry. But it must be realized that there are situations and conditions affecting the entire business world which are advantageous to the buying of almost all securities, while at other times the conditions are decidedly unfavorable. At such times it is hazardous to invest in any stock unless one is prepared to disregard a 50% drop in values to await blithely a possible prosperous turn of affairs in the distant future.

For many years, however, large stock market operators and traders have recognized the fact that a knowledge of the approximate trend of the market in the future is of great value in their

trading. While many sceptics still believe that it is impossible to forecast the market to that extent, the fact remains that a great many successful traders today base their stock trading quite as much upon the broad movements of the entire stock market as upon the analysis of balance sheets.

This volume is entirely devoted to the problem of forecasting the trend of the stock market. The first chapter presents evidence that almost every stock will synchronize with the general trend of stock prices. A reliable forecast of a change in trend would therefore provide a source of information profitable to those able to appreciate its significance. Accordingly, every series of statistical data which bears, or is commonly supposed to bear, some relationship to stock trends, has been considered. Since most of these data are published widely in various papers and journals, with more or less accurate interpretations, the effort has been made here to evaluate each one impartially, comparing its merits and limitations by means of charts and descriptions. It is hoped that the reader will acquire from this study a better understanding of the forecasting value of all such data, so that he may discriminate between them and utilize the more efficient to his personal advantage.

This book has been made possible only through the work of hundreds of field agents, statisticians, and economists who have gathered and compiled the statistics here used. It is quite impossible to thank each of these for his indirect contribution to this work; but to William A. Eagan, Thomas F. Lyons, and Harris J. Nelson of "Barron's" staff, direct acknowledgment can be made for their helpful suggestions. Edward B. Gordon and others not connected with financial journalism have also made many suggestions which have been of great help. And finally, these chapters would have been impossible without the help of Miss Charlotte Beals in the computations and charts, and Miss Mary Hall in editing the manuscript and proofreading.

KSVS

JUNE, 1927.

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CHAPTER I

Most Stocks Follow General Trend

SUCCESS as an investor depends upon one's ability to appraise the future with a reasonable degree of accuracy. Many investors try to dodge responsibility by investing in government bonds, first mortgages, savings bank deposits or insurance. After they have made sure that the companies behind these investments are sound, they believe that the future has been well taken care of.

That both the interest and the return of principal on the investment will be paid in a fixed number of dollars—that is, five dollars per year interest with assurance that each one hundred dollars invested will be returned to him intact—usually satisfies this type of investor. But these dollars are useful only in that they have purchasing power, the power to buy things. If such investments are to prove profitable, the cost of living must decline. Thus, if the cost of living falls, investors in securities bearing a fixed return will have greater purchasing power, and they will be the gainers. If the cost of living rises, however, the results will be disastrous, for the fixed number of dollars they receive from their investments, as well as their principal when it is returned to them, will buy less as prices rise. The success of investments in bonds, mortgages, bank deposits and insurance, therefore, depends on the future cost of living.

INCREASING POPULARITY OF COMMON STOCKS

Recent studies have proved that the investor ought no longer to gamble on the trend of the cost of living. If he

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buys a diversified list of common stocks, he takes fewer chances on the trend of commodity prices. He is then part owner in many different businesses. A rise in the cost of living will spell larger profits for his companies, and as an owner he will be entitled to a proportionate share of these larger profits. For this reason an increasingly large percentage of investors are finding it desirable to invest at least a portion of their funds in common stocks and thus avoid the shrinkage in real income, or purchasing power, resulting from mounting price levels.

But when an investor becomes the owner of shares of common stock, he finds that he must change his attitude toward his investments. Being a stockholder brings with it new complications.

MINOR FLUCTUATIONS SHOULD BE IGNORED

Not long after he has become a common stock owner, the investor, having heard that stocks fluctuate in value more than bonds, looks in the paper to see what his partnerships are worth. As likely as not he will discover that the stock which he paid \$100 a share for is now fluctuating between $\$100\frac{3}{4}$ and $\$101\frac{7}{8}$ for no apparent reason. As a bondholder, an increase of this amount in the value of one of his bonds might have been the occasion of a visit from a bond salesman to consider the advisability of his "taking his profit" and buying some other bond. Nothing is more certain, however, than that he will be unsuccessful as a stock investor if he continues the practice of taking small profits which he learned as a bondholder. He must learn that these minor stock fluctuations which occur hourly and daily are caused by the sensitiveness of a highly organized stock market, and that no one except the professional trader on the floor of the Stock Exchange is in a position to take advantage of them.

By observing the course of stock prices over a period of weeks, the investor will notice that there is another type of movement besides the hourly and daily minor fluctuations. At certain times the entire market seems to surge upward or downward for periods of from ten days to three months. In a stock market move of this kind, the price of an active stock is often run up or down as much as 15%; a stock selling for \$100 often rises to \$115 or falls to \$85 in the course of a few weeks. These movements are very much broader in their scope than the hourly and daily fluctuations, and the fact that in this type of movement most of the market moves as a body has inspired many attempts to forecast them. Up to the present time, however, no great success has been attained in this respect. Like the minor ones, these fluctuations are largely a matter with which only the professional trader should concern himself.

LONG-TIME TREND TAKES CARE OF ITSELF

The investor need not worry over the "long-time" trend of stock prices. It has been proved that the stockholder who owns a diversified list of stock in the most important industries will find that the value of his investments will grow with the country. There will be a gradual enhancement in the value of his stocks. While bull and bear markets will have their effect upon the value of his holdings, the trend of sound values has always been upward.

The investor's problem will be much simplified if he admits at the start that the hourly and daily fluctuations, as well as those which occupy from ten days to three months, are phenomena which he can well afford to leave to professional traders. Moreover, he can probably afford to ignore the long-time trend of prices, knowing that the growth of the country always works to the

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advantage of the common stockholder. After this elimination process there is one type of stock movement left for him to consider: bull markets and bear markets.

BULL AND BEAR MARKETS

Upon all sides the new stock investor hears strange talk about bull and bear markets. A casual observation will show him that the length of time consumed by these bull and bear markets varies considerably. The bull markets—prolonged periods of rising stock prices—generally last between two and three and one-half years. Bear markets—prolonged periods of falling stock prices—generally last between six months and a year and a half. Years ago it was believed that these bull and bear markets repeated themselves automatically after a certain period of time had elapsed. It is known today, however, that markets do not recur with clocklike regularity, although the conditions which cause these broad swings in security values do tend to repeat themselves.

SOME DIFFICULTIES OF STOCK MARKET FORECASTING

Besides the many efforts made to forecast broad movements on the basis of time alone, many worthy attempts have been made to discover barometers which would help in estimating the probable future trend of stock prices. Within the past few years many attempts have been made to forecast bull and bear markets. "Forecasting services," "forecasting lines," "buy signals" and "sell signals" galore have been used to forecast the trend of the market. Everyone has been looking for one simple rule which would tell him with unfailing accuracy when to buy or sell his stocks. When they failed to find anything which would show that degree of accuracy, many investors fell back into the old error of believing that there is an "unseen hand" which controls the stock market.

At the same time there have been many other investors who have decided that the only route to substantial success in stock investing is to carefully analyze each stock and forget the trend of the general market. But it is extremely difficult to forecast what the distant future in this scientific age holds in store for a particular company. In the United States, about 1840, canals and toll-bridges were considered safe investments while railroads were considered nothing but a speculation. Then the railroads took the place of the canals and toll bridges in popularity as investments. Horse cars used to be popular investments, but were replaced by electric trolley cars, which in turn are being supplanted by bus lines. Who knows but that ten or twenty years from now there will be a substitute for these bus lines? There is no man living who could have foreseen all these developments or any substantial number of them, for they were caused by new inventions. No one knows when these inventions are going to hit close to home and render valueless the stock of a company which has been most carefully analyzed.

DIVERSIFICATION IMPORTANT

In order to get around these difficulties it is generally agreed today that the investor must choose a diversified list of stocks in which to invest. In this way he will spread his risks so that he will not lose all his invested money if the phonograph is superseded by the radio, if women wear silk instead of cotton and wool, or if electricity replaces oil and gasoline. If one of his investments goes bad, he will probably find that there is another which has done especially well. The loss which he suffers from the poor investment will be offset by the profit he gains on the successful investment. Undoubtedly, diversification is a solution to one of the most important problems of the common stockholder.

There is another serious problem with which the common stockholder has to contend. He may find at times that, in spite of broad diversification in his securities, the total value of his holdings will decline more than 25%. Practically all stocks will decline simultaneously. Eventually the market will rise again and in ten or twenty years the investor who has held on to his stocks will find that their value has grown with the country, so that while periodic stock market slumps will affect the value of his stocks they will never again force the average price of his stocks below the price paid for them.

LISTED COMMON STOCKS

In order to prove how vitally bull and bear markets affect the value of all stocks, studies were made of the common stocks listed on the New York Stock Exchange since 1897. For each common stock the average price during the month of lowest stock prices and the average price during the month of high prices in each bull market, as indicated by the combined Dow Jones industrial and railroad averages, were recorded, and the two figures compared. In a similar manner the decline of each stock in the bear markets was recorded. Allowances were made for stock dividends and unusually large extra dividends. In this way a complete record of the major price swings of every common stock listed on the New York Stock Exchange was obtained.

To give a complete account of the findings of this investigation would require much too lengthy a discussion. For use in the present connection, the most significant results have been condensed and are shown in Charts 1 and 2. So much has been condensed into these charts that it is necessary to give a rather detailed description of them in order to make them understandable. Once the

charts are understood the importance of this data to the individual investor will be apparent.

MOST STOCKS MOVE WITH TREND

A preponderant majority of common stocks moves with the trend of the market. The solid black line in Chart 1, which moves across the chart from the left-hand upper corner to the right-hand lower corner, represents the price movement of all listed common stocks during the bear market from March, 1923, to October, 1923. These stocks have been so arranged that those which moved against the trend of the market and *rose* are shown above the 0—0 line. The percentage which these abnormal stocks bore to the total stocks is shown by observing the point where the solid black line crosses the 0—0 line on its way downward. Those stocks which moved with the trend of the market and *declined* are shown below the 0—0 line, together with the percentage of decline. By following the solid black line across the chart it may be seen that it crosses the 0—0 line about where the scale reads "10%." In other words, about 10% of the total number of stocks rose during this period of generally declining stock prices; the investor would have had one chance in ten of choosing a stock which did not decline in price.

A MILD BEAR MARKET

The solid black line does not move along the 0—0 line for even a short distance. This means that stocks refused to stand still but constantly moved either upward or downward, most stocks moving downward with the general market.

It should be noticed that the bear market considered above was a very mild one; in fact, many authorities have hesitated to call it a bear market at all. The railroad

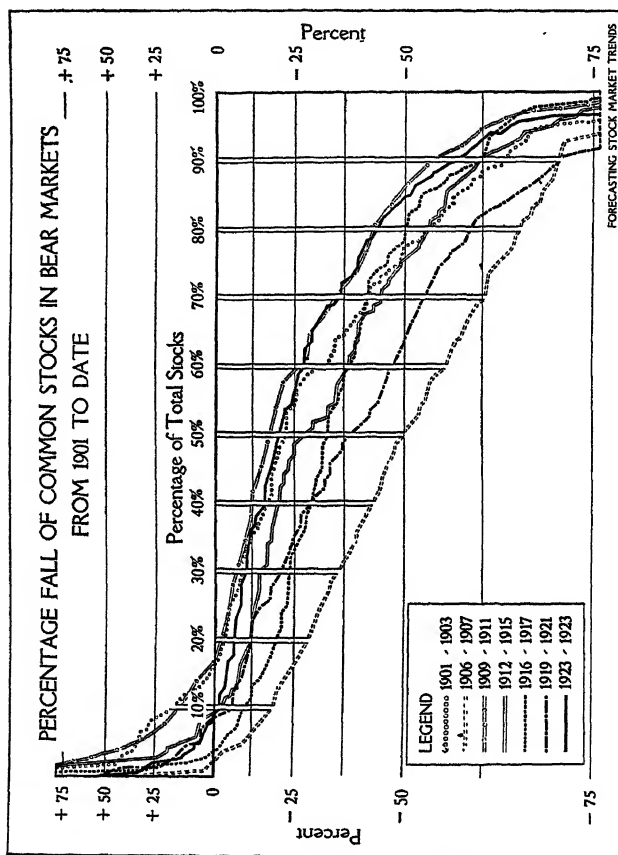


CHART 1

"averages" declined only fourteen points and the industrial "averages" only twenty points. However, in spite of the fact that this particular bear market was a very mild one, it is quite apparent that in even so gentle a decline, the majority of stocks will follow the general trend. More concretely, if it is possible for the investor to foretell even a small decline in stocks, it is well worth his time to do so, for most of the stocks he owns will fall with the general market even though the decline is not great.

SEVERE PRICE DEPRECIATION

Comparing stock prices during a severe bear market like that of 1906-1907, when the Dow Jones industrial "averages" declined about 50 points, it is apparent what a disastrous effect a bear market can have on an investor's holdings. During that bear market one-half of all the common stocks which were selling for the equivalent of \$100 per share before the decline began were selling for less than \$50 per share only nine months later. In this bear market the value of half of all the stocks listed declined to one-half their former price or lower.

In order to understand Chart 1 more fully, consider that each stock started at the beginning of the mild 1923 bear market at a price of \$100 per share. Each stock is placed on this base merely to facilitate comparisons between stocks. The following fluctuations then took place:

10%	rose from 100 to between 100½ and 150
10%	declined from 100 to between 99½ and 94
10%	" " 100 " " 94 " 89
10%	" " 100 " " 89 " 85
10%	" " 100 " " 85 " 80
10%	" " 100 " " 80 " 73
10%	" " 100 " " 73 " 63
10%	" " 100 " " 63 " 57
10%	" " 100 " " 57 " 40
10%	" " 100 " " 40 " 0

GROWING TENDENCY FOR STOCKS TO FOLLOW TREND

Contrary to current opinion, this chart shows clearly that in the later bear markets stocks have shown no greater inclination to move against the general trend of the market than they did ten or twenty years ago. The "legend" of the chart shows the kind of line which represents each bear market; the darker ones representing the later markets, the lighter ones the earlier markets. Following these lines across the chart, it is evident that it has not become any easier in recent times to pick stocks which will rise in a bear market.

After such a demonstration it is natural to question the wisdom of the thought expressed frequently in investment circles that it is better to study individual stock values and ignore the trend of the stock market. Today stocks show even less inclination than in the past to move upward merely because conditions in one industry are better than in another. The results of this investigation are a surprise; for, as is the general belief today, it was thought before making these studies that stocks would show a growing tendency to move against the trend.

A broad survey of all these bear markets shows that even in the mildest bear market, no more than 17 out of 100 stocks move upward against the trend. In the later bear markets, fewer than 10 out of each 100 stocks have moved against the trend. A study of the behavior of common stocks in bear markets is instructive to the average investor, for ordinarily he believes that the thing to do is to hold stocks for the long pull, and pray that his particular issues will move against the trend as the market declines.

AN ANALYSIS OF BULL MARKETS

It is also interesting to make the same sort of analysis of the behavior of stocks in bull markets. Chart 2 shows

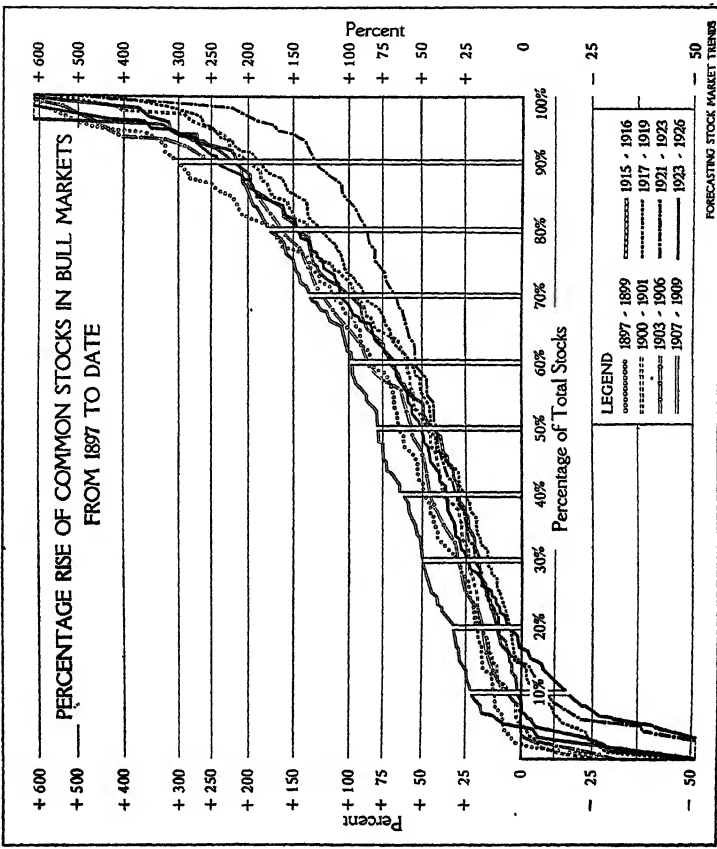


CHART 2

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the detailed movements of all the common stocks listed on the New York Stock Exchange during the bull markets from 1897 up to the present time. It is significant to note that the lines representing the movements of common stocks in bull markets cross the 0—0 line at approximately the same places as did those in the bear markets. This shows that approximately the same proportion of stocks moved downward against the trend in the bull markets as moved upward against the trend in the bear markets.

There is one important distinction to be observed, however. In the later bull markets there has been an increasing tendency for stocks to move downward while the general market rises. In other words, while in the recent bear markets a smaller and smaller percentage of stocks has moved against the general downward trend, in the recent bull markets an increasingly greater percentage of stocks has moved against the general upward trend.

In any event, in neither a period of rising prices nor a period of declining prices does the investor have a better chance than 17 out of 100 of selecting stocks which will move against the trend. From the limited movement that actually takes place in these abnormal stocks, too, it is evident that it will be well worth the investor's effort to attempt to forecast the bull and bear markets if possible. Bull and bear markets pull the entire body of common stocks upward or downward with the force of their movements.

FORECASTING DATA AVAILABLE

Investors today are besieged with statistics. Financial papers as well as financial sections of the daily papers are filled with statistics showing business failures, railroad earnings, commodity prices, pig-iron production, chain-store sales, bank clearings, money rates, and a host of others. These figures are generally published merely as

current news items. Usually no attempt is made to explain the relationship between the data published and stock prices. In this volume it is proposed to take up each series of data and to indicate its significance from the standpoint of judging stock market trends. The attempt will be made to point out the principal virtues of each barometer as well as its principal weaknesses. The attitude taken will be that no single barometer can possibly be unerring under all conditions and that in order to get the best results one must use a number of different barometers.

PROFITS DETERMINE VALUE OF STOCKS

The stock of a company which constantly earns \$20 a share is worth more than that of a company which earns only \$5 a share. Broadly speaking, the value of a stock is determined by its earning power, so that if one stock earns four times as much as another it will generally sell about four times as high. Of course, there are many other important factors which must be examined in determining the value of a stock; such, for instance, as the value of property represented by the stock, the proportions of its earnings which a company pays out as dividends, and the risk involved in the business. But of greatest interest to the stock investor is earning power.

EARNING POWER VS. ASSET VALUES

There are many cases of companies whose tangible assets are very small and yet year after year these companies turn in large earnings and their stocks sell at high figures. These high prices seem unwarranted to one who considers asset value of greater importance than earnings. On the other hand there are many companies which have tangible and seemingly very valuable assets, yet the stocks

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of these companies sell at moderate prices simply because their earnings are moderate.

The earning power of different companies varies greatly between companies, between industries, and from periods of depression to periods of prosperity. It is only natural to expect, then, that by examining the size of company profits one might find some clew as to the future trend of stock prices. The discussion will presently lead to a consideration of data such as railroad gross earnings, dividend payments by industrial corporations, and the number of business failures which give some clew as to the size of business profits or losses.

But no business can progress unless it buys at a price and sells at a price which leaves a margin of profit. From the standpoint of the common stockholder, this profit margin between cost and selling price is of fundamental importance. As long as the difference between cost and selling price is wide enough the company usually makes money, but as soon as the margin grows too narrow the company loses money. The common stockholder gains or loses according to the width of these price margins, because profits and losses resulting from them affect the value of his stock. In the search to find dependable barometers of the stock market the price fluctuations of individual commodities such as pig iron, coke and cotton sheetings, as well as index numbers of general prices will be examined in an attempt to judge the relation between price movements and the value of common stocks.

VOLUME OF BUSINESS IMPORTANT

There is another factor here which must be considered. Even granting that cost and selling prices are satisfactory, it is necessary that a company do a certain volume of business before it can make profits. Data which shows the volume of goods being produced should, therefore, give

some indication of the size of business profits. It is to be expected that in such data as pig-iron production, coal production, unfilled steel orders, building contracts awarded and the like, will be found some very useful barometers of stock market conditions.

Goods are not produced, however, unless consumers are willing to buy them. Consumers must show a demand for articles before the manufacturer will be tempted to produce them in quantities. In the final analysis it is the consumer who directs the production of goods. Thus he plays a most important part in the fluctuations of business activity which make profits rise and fall, production ebb and flow. Data like department store sales, mail-order sales or chain-store sales, which indicate the size of the consumer's demand, should give some indication of the size of business profits and in this way of the trend of stock prices.

MALADJUSTMENT BETWEEN OUTPUT AND CONSUMPTION

Usually consumers are buying goods either more rapidly or more slowly than they are being produced, for it is seldom, indeed, that consumption and production are being carried on at the same rate. The data which show the relation between production and consumption are given by the volume of trade. Railroad car loadings, the amount of money changing hands in business transactions, and other statistics, give indication of the soundness of the relationship between production and consumption.

In those rare cases when consumption and production are being carried on at a uniform rate the relationship is a sound one, for no more goods are being produced than are being used. But if goods are being produced faster than they are being used, manufacturers are building up stocks of goods. This is ordinarily a bad sign, because sooner or later production will have to slow down until the stocks

of goods are cut down to a healthy size. On the other hand, if goods are being consumed faster than they are being made, it means a satisfactory condition and indicates that in the future general business will increase. In either case, whether there is an excess of production or an excess of consumption, the condition is reflected in the price of common stocks.

In the present business system, large use is made of credit in the transfer of goods between raw-material producers, manufacturers, middlemen, retailers and final consumers. Our money system greases the business ways, until such time as the demand is too great and the supply of grease gives out. The transaction of business today is dependent to a significant degree upon the available supply of money and credit, money rates, and the willingness with which banks grant loans to business men. It is impossible for business to revert to the custom of bartering used by the ancients. It is impossible nowadays to carry on business without banking accommodations, and without adequate banking accommodations business cannot be carried on at a profit to stockholders. In this manner money and banking exercise a powerful influence on the value of common stock.

Some of the types of data which affect profits have been outlined very briefly. But after considering prices, production, consumption, the volume of trade and money and banking, there is still an important class which has not been included. These are the data to be found within the speculative market itself. When companies are enjoying large profits it is easy to induce investors to place their money in new enterprises. During such times it is natural to expect that data showing the volume of new stocks and bonds placed on the market would show large increases. On the other hand, during a period of small business profits one would expect the volume of

such security offerings to be low. The relative activity of the stock and bond market should give some clew to the trend of stock prices.

CHARTS NOT MATHEMATICAL GUIDES

The ingredients of which bull and bear markets are made are the profits of corporations, the price margins at which business is carried on, the volume of production and the volume of consumption, the volume of trade, the money and banking situation, and the conditions existing within the stock and bond markets themselves. In the above order the factors which influence stock values will be discussed and data presented which will help to estimate the future trend of stock prices.

Before discussing the influences which affect stock prices, there is another matter which might well be taken up. Throughout these studies numerical figures called "statistical series" will be used to represent the trend of pig-iron production, interest rates, or some other series of data. In order to permit the reader to see clearly the relationship between each of these series and stock prices, charts are used. It is obvious that by simply looking at a column of figures such as 56.4, 59.3, 62.8, 78.9, 54.2, and so forth, it is very difficult to grasp their magnitude and significance. Charted, however, the fluctuations become at once more intelligible and significant, for the eye can more easily grasp a picture than it can a series of figures in tabular form.

The use to which charts are to be put in these studies should be clearly understood. No case is made here for the "chart fiend" who, observing how symmetrical certain statistical data appear when charted, seems to come to the conclusion that the stock market is controlled by an architect who possesses an unusually fine sense of proportions. He does not attempt to understand the work-

ing of the business system, but believes the whole solution can be found in the laws of mathematics. When a stock falls above or below a certain line on his chart, the "chart fiend" acts automatically; he does not feel that the human element is worth a snap of the finger.

Herein lies the weakness of his "system," for nothing is more certain than the fact that men do not buy stocks in sufficient quantities to cause a bull market or sell them in sufficient quantities to cause a bear market by the use of any mathematical rule. On the contrary, they buy and sell when their instinct tells them. The size of their pocketbooks and their analyses of the future lead them to act, and there is no law of mathematics to coerce them.

CHARTS PREVENT ILL-ADVISED ACTION

Charts are used for two distinct purposes: they give a more accurate picture of actual conditions than could be obtained from the figures themselves; and they allow the investor to maintain his equilibrium by giving a correct impression when tips and rumors and gossip run rampant, which might lead him to act unwisely.

The stabilizing influence of charts is very important. Under the influence of gossip, tips and rumors a normal person will feel a tremendous urge to act. He simply cannot rest until he has acted. He tries to reason with himself, but unconsciously finds that the desire to do a certain thing has so distorted his memory as to the reasons why he should not, that his basis for sound judgment has been destroyed. He magnifies the favorable factors and minimizes the unfavorable factors. In the end he does as the tips and rumors have told him to do.

Here is where a chart will faithfully direct him; it will show him a true picture of conditions uncolored by false gossip, tips or rumors. If the investor is thus guided, he will have no cause to look back upon his actions unable to

believe that he ever could have been tempted to act as he did in the face of so many danger signals.

As they will be used here, charts are not intended to forecast with mathematical accuracy, but only to give a true picture of general conditions. History is a reliable teacher, and it is fortunate that in this case historical records can be represented in simple chart form.

CHAPTER II

Business Failures

THE foundations for bull and bear markets, as we know them today, were laid in 1763. Two Englishmen broke the ground. In 1763 Hargreaves invented the spinning jenny. A year later Watt invented the steam engine. With the spinning jenny and steam engine came the "Industrial Revolution."

While there had been many important inventions before these two, none of them had affected the business life of the people to the same extent. The printing press, movable type for printing presses, gun powder, and other inventions affected the social and political life of the people more than their business activities. But the spinning jenny was revolutionary, because for the first time it allowed machines to supplant hand labor on a large scale. Then came the steam engine to provide a means of transporting the product of the spinning jenny rapidly and in large quantities. Thus the spinning jenny was the basis of today's "mass production," and the steam engine provided the method of making a market for the product.

AMERICA'S MANY CONTRIBUTIONS

In the development of automatic machinery, America, as everyone knows, has gone the English one better. Fulton and Fitch, steamboat inventors; Perkins, nail-machine inventor; Whitney, inventor of the cotton gin; Newbold and his iron plow; Whittmore and the carding machine; and Evans with a high-pressure steam engine constituted the first contingent of the American army of inventors who even before the year 1800 had perfected inventions which led to what is known in history as the "Industrial

Revolution." After 1800 the development of new inventions was even more rapid, and recently it has reached its zenith in the development of mass production in big American automobile plants.

DIVISION OF LABOR RESULTS

In the present consideration, the most important effect of these new inventions has been to specialize each process from producer to consumer. Instead of one worker's performing all the operations necessary to complete an article, under this new regime he performs only one small task, and often does not even see the finished product. Entire companies specialize; that is, they perform only a part of the work necessary to make a finished article. Whereas the primitive farmer made his plow from a single piece of wood, cut and fashioned by his own hands, the modern farmer buys a plow made by the combined efforts of several different concerns. One factory might make only the handles, another the bolts, another the iron share, and perhaps still another does nothing but assemble these parts.

THE ORIGIN OF "BUSINESS CYCLES"

In marketing the finished product, there is a further specializing of the process of production. Some sort of system had to be arranged by means of which the plow manufacturer in Michigan could sell his product to farmers in Maine or North Dakota. Thus grew up the manufacturer, the wholesaler, and the retailer, each of whom performs some part of the work necessary to place the product on the market. The result has been to further specialize the processes required to complete the finished product. This specialization of processes in turn increased the risks which business men had to take. A sudden increase or decrease in demand for a product could not so easily be

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taken care of when it was necessary to speed up or slow down the production of many different plants. It was during the years when industry was being transferred from the home to the factory that full-fledged "business cycles" first made their appearance.

NEW REGIME INCREASED RISKS

In their quest for profits, business concerns have had to take countless risks: the risk that accompanies the introduction of all new inventions, style risks, credit risks, risk of price fluctuations, and a thousand and one other risks. While it is impossible for a concern always to choose only the wise risk, in the long run it must have chosen a majority of its risks wisely if it is to stay in business. Obviously there must always be an excess of profits over losses if a business is to succeed.

The concerns which do not choose their risks wisely suffer losses and ultimately fail. The relationship between these firms which fail, and stock prices, has at times in the past been very significant and is deserving of detailed study.

ALL BUSINESS FAILURES NOT RECORDED

Manifestly, it is impossible to keep records showing all companies which fail in business. There are hundreds of companies annually which prove unprofitable and retire quietly from the business arena, as their owners cover the losses with their private resources. Such companies do not enter into the bankruptcy courts and, therefore, there is no record kept of them.

Most businesses, however, are called upon to stand on their own feet. If they consistently lose money, they fail, are forced into the bankruptcy courts, and they are placed on public record. Data showing the total number of such failures are kept by two credit-advisory bureaus: Dun's

and Bradstreet's. The figures which the two bureaus publish are in substantial agreement at all times, the slight difference which does occur being caused by their different definitions of what constitutes a "business failure," and the fact that one of them includes bank failures and the other does not. Figures are published every Saturday in both "Dun's Review" and "Bradstreet's," showing the number of failing concerns and total liabilities. The figures are widely copied by the daily papers. At the end of each month these weekly figures are combined into monthly figures. It is the monthly figures that will be examined here.

NUMBER OF FAILURES SIGNIFICANT

Theoretically, it would seem as though the total number of dollars involved in failures would be more significant than the number of concerns failing, since one large failure for \$10,000,000 will have a more disastrous effect upon general business than a smaller failure for \$1,000,000. Experience has shown, however, that the figures showing the total liabilities of firms failing, fluctuate closely with the number of firms failing, and that the number of firms failing is not so erratic in its fluctuations. Because of its steadiness, the number of failures is more appropriate as an index of general business conditions.

In analyzing the failure figures, Dun's and Bradstreet's have classified them according to causes of failures, according to industries, and by geographical sections of the country. While these refinements are not particularly useful in determining the trend of the general stock market they are helpful in determining conditions within a specific industry. Should an investor be interested in determining conditions in a particular industry, he will find the classifications by industries and by sections of the country helpful. In order to give an idea of the contents

and significance of these classifications they will be described. All of these classifications made should help to a better understanding of the significance of the failure figures.

MATHEMATICAL INTERPRETATIONS OF HUMAN AFFAIRS

Bradstreet's classification of the causes of business failures affords an excellent illustration of the fact that human affairs cannot be represented with great mathematical accuracy. Bradstreet's, in one of its classifications, places a mathematical interpretation on the cause of business failures:

Failures due to:	1921	1920
Incompetence.....	32.0%	32.5%
Inexperience.....	5.8	6.7
Lack of capital.....	29.4	32.4
Unwise credits.....	1.1	1.8
Failures of others.....	1.1	1.2
Extravagance.....	.4	1.2
Neglect.....	1.3	1.3
Competition.....	.9	1.5
Specific conditions.....	23.3	14.4
Fraud.....	4.7	7.0
Total.....	100.0%	100.0%

The compilers of this table probably would be the first to acknowledge that the figures are little more than guesses. It is almost impossible to ascribe the causes of a failure to a single factor such as incompetence, inexperience, or lack of capital. Failures are generally due to many causes and it is usually impossible to give a single explanation.

TWO CAUSES OF FAILURES NOT CLASSIFIED

Many failures are caused by the fact that businesses are promoted which have no economic justification; that is, the company serves no useful purpose in the business

system and is doomed to failure from the start. When business is good and prices rising it is often possible for these industrial fantasies to keep up their bluff, but they fail in large numbers when business again becomes dull and prices fall. This affiliation between business failures and commodity prices is important and will be considered later, but the main point here is that many concerns fail because there is no justification for their existence.

The insatiable desire of business men to make their companies as large as possible is also responsible for many failures. In their craving for extension and expansion, men overbuild, overbuy, overproduce, overextend credit, and oversell. Bankers play an important part in these enlargement programs, for when bank reserves are high they encourage borrowing in an effort to make a profit on the capital of their banks. The critical point is reached when bankers find they have carried their lending operations too far and commence to call their loans. The failures thus caused may be attributed in the above classification to "lack of capital," whereas in reality they were caused by unwise expansion. Thus it is seen that two of the fundamental causes of business failures,—no economic justification and overexpansion—cannot be found separately in the above table.

FAILURES CLASSIFIED BY INDUSTRIES

Dun's further classifies failures by branches of business. This sort of arrangement will prove helpful to an investor who is interested in conditions within a specific industry:

Manufacturers:

- Iron, Foundries, and Nails
- Machinery and Tools
- Woolens, Carpets, and Knit Goods
- Cottons, Lace, and Hosiery
- Lumber, Carpenters, and Coopers
- Clothing and Millinery

Hats, Gloves, and Furs
 Chemicals and Drugs
 Paints and Oils
 Printing and Engraving
 Milling and Bankers
 Leather, Shoes, and Harnesses
 Liquors and Tobacco
 Glass, Earthenware, and Brick
 All other
 Total Manufacturing

Traders:

General Stores
 Groceries, Meat, and Fish
 Hotels and Restaurants
 Liquors and Tobacco
 Clothing and Furnishing
 Dry Goods and Carpets
 Shoes, Rubbers, and Trunks
 Furniture and Crockery
 Hardware, Stoves, and Tools
 Chemicals and Drugs
 Paints and Oils
 Jewelry and Clocks
 Books and Papers
 Hats, Furs, and Gloves
 All other
 Total Trading

Agents, Brokers, etc.

 Total Commercial

Since it is the purpose of this book to study movements of the entire stock market, statistics showing the total number of business failures will be of greatest value. Either the Dun's or Bradstreet's figures would be adequate for use here.

BRADSTREET'S NUMBER OF BUSINESS FAILURES

The number of business failures as reported by Bradstreet's was arbitrarily selected for use. It is now the purpose to estimate the value of these figures showing

business failures as a barometer of the stock market. It is obvious from Chart 3 that we must examine them

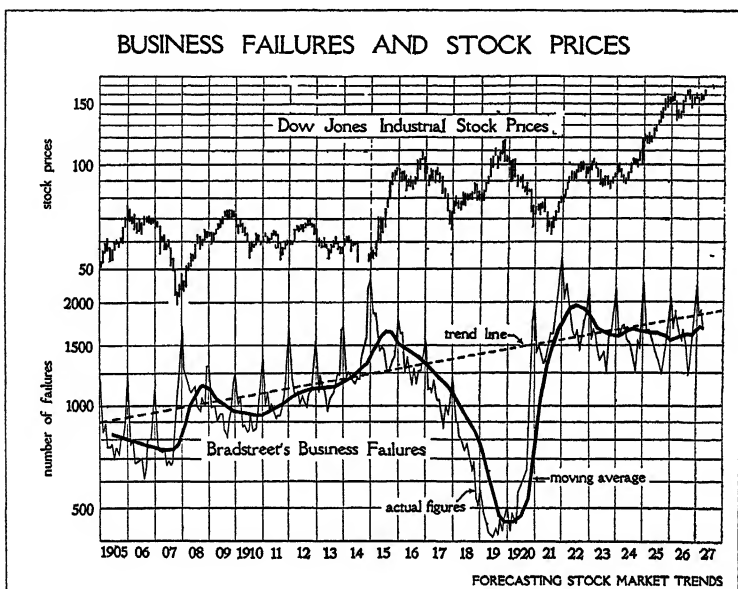


CHART 3

Professor W. L. Crum suggests a downward revision of the pre-war Dow Jones Industrials in order to put the 12 stocks used before the war and the 20 stocks used after the war on a comparable basis. The two averages are not on the same basis unless a downward revision of about 25% is made in the pre-war averages. This change is discussed in detail in Chapter XVIII. The figures used in all the charts in this book have been revised as suggested by Professor Crum, thus lowering the pre-war Dow Jones Industrials about 25% below the figures as usually published. After the war the averages as charted agree with the present Dow Jones figures.

closely if they are to prove helpful because a first glance reveals only a series of figures which seem disorderly and perplexing.

REFINED STATISTICAL METHODS UNNECESSARY

It is apparent that there is a marked increase in business failures the first of each year as annual corporate reports are being issued, and that, after this harvest has been

reaped, the number of failures declines in mid-year. These characteristic movements which occur regardless of the general high or low position of the failure curve are known as "seasonal" fluctuations.

HOW MOVING AVERAGE IS MADE

The seasonal movements in business failures are so pronounced that it is advisable to eliminate them. To simplify the figures, a twelve months moving average has been taken. The method used was merely this: the monthly figures from January to December, 1905, were added and divided by the number of months in the year, viz., twelve. The average figure thus obtained was used to represent the last month of all the twelve months used, in this case the month of December, 1905. To obtain the January, 1906 figure, the average was "moved" along: the January, 1905 number of business failures was dropped and the January, 1906 failure figure added, and again the total was divided by twelve. In this way a series of figures is obtained from which the seasonal variation has been eliminated.

A great deal will be learned about the peculiarities of this type of moving average as the investigation progresses. But here it should be noted that because of the fact that it is centered on the 12th month, rather than on the 6th or 7th months which would, of course, be nearer the middle, this moving average usually changes direction after the actual figures have changed. The tendency is for the moving average to move about five months later. At first thought this might seem to be a serious objection to the use of this statistical device—but let the device speak for itself. Only here let one be cautioned against reasoning from the moving average. Because the moving average of a series like pig-iron production is usually rising when stock prices are declining

one should not conclude that the volume of pig iron being produced is actually increasing until one has consulted the actual figures and made sure that such is the case.

THE SECULAR TREND

There is another type of movement which is often corrected by refined statistical methods, but for present purposes it is only necessary to make a mental note of it. One would naturally expect that as the country grows there will be a larger number of firms which are potential failures. But since from the standpoint of general business conditions it is no more significant if 1000 firms fail with 1,000,000 concerns in business, than if 2000 fail out of a possible 2,000,000, the growth of the country must be taken into account. It is easy to do this by imagining a line of "growth" which will cut the curve for failures into equal parts, so that the areas above this line to the failure curve will be equal to the areas below the line of growth to the failure curves. Ignoring the years 1918, 1919, and 1920, for reasons to be explained presently, this growth line, often called the "trend," or line of "secular trend," is found to begin about 900 on the left-hand side of the chart and end about 1900 on the right-hand side of the chart. In other words, whereas in 1905 it was common to expect on the average 900 failures a month,—after making allowances for the season of the year,—in 1926 it is normal to have as many as 1900 failures a month.

COMPARING HETEROGENEOUS UNITS

It is illogical to compare figures in dollars with figures stated in pounds, bushels, millions of dollars, or any other unit, if a chart with an ordinary scale is used. But by using a ratio scale it is possible to make direct com-

parisons between the slope of one curve and that of another regardless of the unit of measurement used. No matter whether the series is quoted in dollars, cents, pounds, or any other unit, direct comparisons can be made between the curves because the figures are expressed in terms of percentages when plotted on a ratio scale. The ratio scale shows percentage relationships.

MANY FAILURES WHEN STOCK PRICES ARE LOW

The data showing the *actual* number of business failures, uncorrected by computing a moving average, are useful in at least one connection. At times these figures show abnormal increases. In October, November, and December, 1907, and in January, 1908, in November and December, 1914, and January, 1915, in December, 1920, and late in 1921, the number of failures increased greatly. It is most significant that about the time that failures were unusually heavy, stock prices were at their lowest levels. In other words, in 1907 failures gave an indication that the bull market of 1908 and 1909 was near at hand; in 1914 that the bull market of 1915 and 1916 was coming; and more recently, in late 1920 and 1921, that the bull market of 1922 and 1923 was in the making. In the past whenever stocks have declined substantially, an abnormal increase in business failures has meant that stock prices were at low ebb and were due to rise.

VALUE OF MOVING AVERAGE OF FAILURES

The *moving average* of business failures is less erratic in its fluctuations than are the actual figures. The *moving average* shows a definite trend, which is usually in one direction for considerable periods of time. It is easier to draw conclusions as to the relationship between failures and stock prices from these *moving-average* figures.

The *moving average* generally turns upward about the

time that stock prices are low. This occurred in 1907, 1915, and 1920 in a most pronounced manner, and less decisively in 1911 and 1924. Whenever the line has risen rapidly it has signified the beginning of an important bull market. For barometric purposes, these *moving-average* failure figures possess one important virtue that the actual figures do not. On several occasions they have given definite indications that stock prices were high. In 1906, 1909, 1916, late in 1922, and 1925, they declined sharply after reaching a peak. Few failures generally meant high stock prices, and it will be observed that about the time that failures began to decline stock prices in the past were at high levels.

BAROMETER ACTS QUEERLY

So far a discussion of the sharp decline in business failures in 1917, 1918, and 1919 has been carefully avoided. These years call for special consideration.

What happened to the barometer in 1917, 1918, and 1919 that it declined so abruptly, and what caused the tremendous increase in failures in 1920 and 1921? The explanation lies in the fact that it is easy for concerns to make money when prices rise, and difficult for them to make a profit when prices decline. The faster prices rise, the easier it is to make money; the faster prices decline, the more difficult it is to make money. Commodity price fluctuations will help us to explain the queer antics of the barometer from 1917 to 1921.

The close relationship between the business failures and commodity prices is at once apparent when they are shown together as in Chart 4. From this comparison it is obvious that the increase in commodity prices in 1917, 1918, and 1919 made it easy for concerns to make money. Hence there were few failures. But what a harvest of

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failures was reaped with the sharp decline in commodity prices in 1920 and 1921!

It is obvious that a price upheaval, such as that which

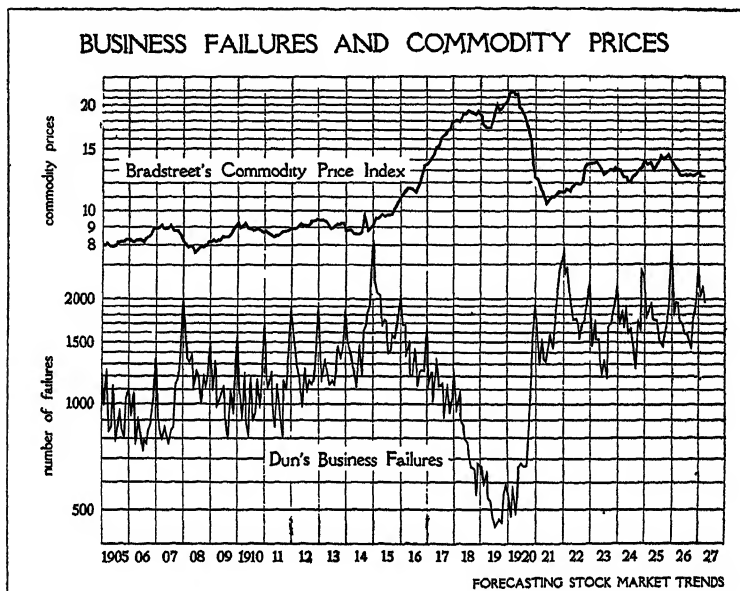


CHART 4

culminated in 1920, destroys the barometric value of business failures.

BAROMETRIC VALUE OF FAILURES

Summarizing the value of business failures in stock market forecasting, it has been seen that the *actual* figures are useful principally to show the starting point of broad bull markets; a very large number of failures indicating the proximity of a bull market. The *moving-average* figures of business failures are useful in two connections: when they turn upward after a prolonged decline, stock prices are generally low; when they turn sharply downward after a prolonged rise, stock prices are often high.

The main disadvantage of these failure figures is that a price upheaval will render them practically valueless for barometric purposes.

CORPORATE DEFICITS

From this discussion, one must not assume, however, that failures represent all the losses which companies suffer as business moves from periods of prosperity to periods of depression. Losses need not necessarily result in failure. In 1919, 34% of all the corporations in the United States reported losses; in 1920, there were 41%; and in 1921, 52%—more than half of all the concerns in the country—reported net losses for the entire year. But a firm does not fail merely because it loses money during one year.

CHAPTER III

Earnings and Dividends

FEW concerns make money from the very start, and all companies suffer occasional losses even after they are well established. Usually, however, profits accumulated in good years more than offset the losses sustained in bad years and the company continues to do business in spite of periodic losses.

Many attempts have been made to limit the size of profits which a business might earn. Especially has this been true of railroad and public utility corporations. Certain attempts have also been made to eliminate profits entirely. In Russia a communistic government prohibited profits to capital. As a result of this drastic move, however, the production of goods almost stopped, and business progress was brought to a standstill. The limitation of profits in an industry usually has the effect of shifting capital and labor into more remunerative industries where the profit possibilities are not curbed.

In order to understand profits more fully it is necessary to consider how they are made and how they are measured.

NOTHING RISKED, NOTHING GAINED

"Nothing risked, nothing gained," says the old adage. Here in a nutshell is the explanation why some men make profits and others do not. In order to make money a business must take chances. Some risks can be avoided, but if a business refuses to take any risks, it will make no profit at all. The size of a company's profit will increase or decrease in proportion to the accuracy with which the wiser risks are chosen.

The publishing of accurate information showing commodity stocks on hand, output, sales, prices, wages, etc.,

is part of a constant endeavor to reduce the number of risks in business. The shipowner may obtain a weather forecast from the Weather Bureau. The statistical data revealing conditions in industry serve the same purpose for the business man who desires to avoid the storms of industry. But in spite of this information, profits vary because business men interpret the data in different ways, just as shipowners will interpret weather forecasts in different ways and sometimes decide to take a chance in spite of warning signals.

VARIATION IN EARNINGS

Not alone does the size of one company's profits vary from another's within the same industry. Profits also vary greatly from one industry to another. In 1920 the leather industry was prosperous, the automobile business fairly poor. In 1926 the tables were reversed, the leather industry was in a bad condition and the automobile industry prosperous.

Of all types of profit variations, however, what is most significant here is the fact that, taking all business concerns as a whole, profits increase and decrease in cycles with the periods of business prosperity and depression. This fact will be examined further, but first it will be necessary to get an idea of the manner in which profits are measured.

MEASURING SIZE OF PROFITS

The "net profits" of a business cannot be accurately obtained by merely subtracting total expenses from total receipts. The difficulty lies in estimating "expenses." The most obvious items of expense would be the cost of materials, power, light, heat, salaries and wages, interest on bank loans, interest on bonds, and office expenses. But expenses cannot be calculated so easily as this.

If the stockholders received all the money left after these expenses had been paid, eventually when the equipment was worn out there would soon be nothing left of their original investment. Provision must be made for the replacement of buildings and equipment, or the business cannot go on. Experience has shown that without repairs, a frame building will be useless in about twenty years, a brick building in about thirty years, and a concrete building in about forty years. Machinery deteriorates or becomes obsolete at an even faster rate. Therefore, if all that which is apparently net profit is given to the stockholder, with no allowance for the replacement of worn-out equipment, he will find that his principal has been returned to him in the guise of a "dividend."

There are many hazards such as theft, accident, fraud, credit, and fire against which a company must insure itself. But after adequate provision has been made to insure against all possible hazards, as well as for the replacement of buildings and equipment, the money which is left, if the business has been successful, is the stockholders' surplus.

BALANCE-SHEET MANIPULATION

It is possible to manipulate balance sheets to show larger or smaller earnings than actually exist. In an effort to vindicate a poor management, maintain the legality of its bonds, sell its securities, or to profit by market price fluctuations of its stock, a company's balance sheet may be "padded." In this way, the true condition is not disclosed until it is advisable or necessary to do so.

Although inaccurate accounting methods are sometimes used intentionally, even the most scientific and honest accounting systems can do little more than guess at the actual size of business profits. For it is impossible to

state in terms of dollars such intangibles as good will, patents, copyrights, or even the present value of property or raw materials.

At best the balance sheet can be little more than an estimate of the condition of the business only at the moment the figures are calculated. The items in the balance sheet change so rapidly in value that the day after the balance sheet is made it often does not give a true picture of conditions.

DISPOSITION OF PROFITS

After making adequate allowances for all contingencies, the question of what to do with the surplus arises. It belongs to the stockholders; but if it is all paid out to them as dividends, there would be no funds with which to carry on the expansion of the company.

It is the duty of the directors to decide what proportion of surplus profit shall go to the stockholder and what proportion shall be reinvested. There can be no hard and fast rule in this connection. Usually directors decide to keep a portion of the company's earnings for the purpose of expanding the business. After paying a 6% or 7% dividend rate, directors generally reinvest the remainder of the surplus in the company, if by so doing they can receive a larger return on the money than a stockholder could by investing the same amount outside the company.

Again, if companies paid out all that remained after reinvesting part of business profits in the company, the dividend rate would vary widely. Since it is not uncommon for the soundest companies to lose money at times, the stockholder might even be called upon to return some of the money he had received. Such proceedings would prove embarrassing to the management and disagreeable to the stockholders. In order to have money with which to carry on an expansion program for the company, with

which to meet unforeseen expenses, and with which to maintain a steady dividend rate, it is desirable to pay out only a portion of earnings in the form of dividends.

DATA INDICATING SIZE OF PROFITS

It has been noted that business cannot be carried on successfully without the stimulus of profits, that profits result from taking risks, that profits cannot always be measured definitely, and that it is not safe to pay out all of the profits in dividends. These facts are of assistance in understanding the methods used to measure profits and the value of the data when used as barometers of the stock market.

In an attempt to calculate the profits of a company, gross earnings are a primary consideration. Gross earnings are earnings before expenses are deducted. Because of the large variations in the cost of labor, raw materials, and the innumerable other expenses of manufacture, large gross earnings do not necessarily spell large net earnings. In fact, large gross earnings may dwindle to an actual loss after all expenses have been met.

Therefore, net earnings, or the actual profit after every expense has been deducted from gross earnings, would seem to be the more significant from the stockholders' point of view. However, many concerns constantly making large net profits do not pass on any substantial portion of this profit to their stockholders. Since the value of stock rests definitely upon the amount of dividends paid, it would seem that actual figures of dividends would prove the best barometer of stock prices.

But here again there are difficulties. It is becoming a custom in financial circles to declare dividends only after a prolonged record of yearly earnings has proved that a certain dividend rate can be maintained. Dividend payments, therefore, are becoming less sensitive to the changes

in earnings, which, in turn, are caused by changing conditions in business as a whole.

Gross earnings, net earnings, and dividend payments all seem to have objectionable features for use as stock market barometers. But there is no series of statistical data which does not have its limitations. The available data must be taken for what they are worth, keeping the deficiencies in mind.

RAILROAD GROSS EARNINGS

The only comprehensive data available showing gross earnings is that furnished by the railroads. The Interstate Commerce Commission compels the railroads to publish monthly statements of their gross earnings. In order to obtain figures which would show general business conditions several agencies have lumped the gross earnings of representative railroads together. These records have been kept over a period of years.

The gross earnings of railroads have been combined in many different ways. In this study two series of figures are used, since no one series has been carried back far enough. The data from 1905 to 1917 was compiled by the Babson Statistical Organization. It is a record of monthly gross earnings of ten leading railroads, including eastern, western, and southern roads. Since 1917 the American Railway Association has kept records of the gross earnings of thirty railroads,—ten eastern, ten western, ten southern. Babson's figures for the years 1905–1917 and the American Railway Association's figures for the years 1917 to date have been placed side by side for use here.

Railroad gross earnings figures show distinct seasonal fluctuations. Railroad traffic is light in the spring and summer, and heavy in the fall and winter during the harvesting and holiday seasons. Gross earnings, there-

fore, decline in spring and summer, and rise in autumn and winter. These seasonal fluctuations are so pronounced that the actual figures are confusing when charted alone. A twelve-month moving average such as was taken of the figures of business failures in the preceding chapter has eliminated these fluctuations.

GROSS EARNINGS INDICATE GENERAL ACTIVITY

Chart 5 shows that railroad gross earnings increased

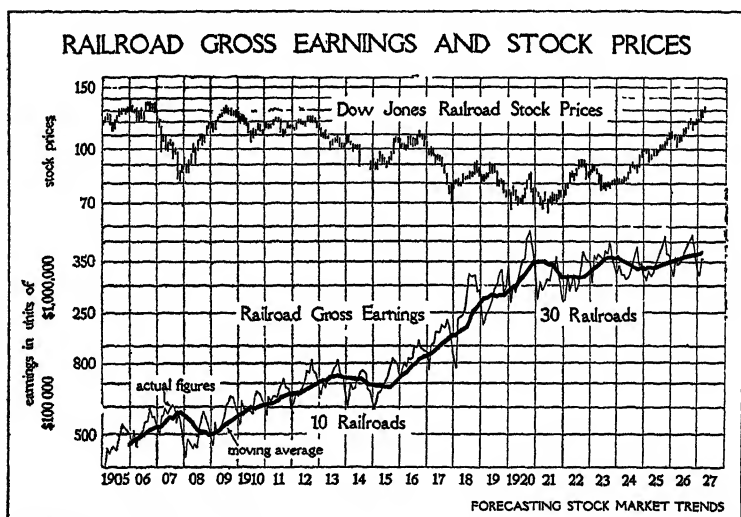


CHART 5

steadily from 1905 to 1920, and since 1920 have increased at a much less rapid rate. Since the gross earnings of the ten railroads prior to 1917 and those of the thirty railroads since 1917 have been charted on a ratio scale, they are directly comparable, in spite of the difference in the total earnings. It is also possible to compare their movements directly with the Dow Jones railroad stock prices.

One would naturally expect that the rapid growth in gross earnings between 1905 and 1920 would have caused

a sharp rise in the value of railroad stocks. A glance at the chart, however, shows that just the opposite occurred. During this period, when railroad gross earnings were increasing by leaps and bounds, the value of railroad stocks was declining. Such a seemingly illogical situation demands an explanation.

LARGE GROSS DOES NOT ALWAYS MEAN LARGE NET

A large volume of business does not necessarily yield large net profits. From the total amount received from passengers and from charges on freight, mail, express, and baggage, must be deducted such things as wages, cost of supplies, repairs, and replacements.

If railroad rates remain the same, the gross earnings of the railroads will naturally increase as the country grows, because the amount of traffic will increase. However, the cost of operating the railroads may increase still more rapidly. From 1897 to 1918 the operating expenses of railroads increased about 200%. While increased traffic acted as a partial offset, the meagre 12% to 20% increase of rates allowed the railroads by the Interstate Commerce Commission in 1918 hardly solved their problem of meeting the increased cost of operation.

Thus the railroads might have profited by the increased volume of business if they had been able to increase their rates when the operating costs rose, as most industrial concerns were free to do. Railroad gross earnings do not give an accurate estimate of what net earnings are going to be but are useful only as a gauge of the amount of traffic in the country. As such, however, they measure the degree of business activity.

COMPARISON OF RAILS AND INDUSTRIALS

The movements of railroad stock prices in relation to industrial stock prices during this period may be com-

pared by using Chart 5 with Chart 6 on page 46. From 1905 to 1912 both the rails and industrials moved together closely. Each rose and fell in about the same proportions with the ebb and flow of business activity. From 1912 to 1921, however, it was a different story; the rails did not move with the rest of the stock market. In the 1915-1916 bull market, when the industrial averages rose 100%, the railroad averages rose less than 30%; but in the bear market that followed in 1917 the rails declined as much as the industrials. The sharp rise in commodity prices during these years increased operating expenses of railroads at a time when they were unable to raise their rates.

In 1919 railroad stocks again failed to respond during the bull market of that year. And during 1920, when commodity prices were at their highest point, rails sold about as low as at any other time during the period. Since 1920 there has been a sharp decline in the cost of railroad operation, and there has been a correspondingly substantial rise in railroad stock prices.

USE OF GROSS EARNINGS IN FORECASTING

The rise and fall of railroad gross earnings with business activity is apt to be obscured if the figures are not examined closely. During the period from 1905 to date there were only four gross earnings cycles caused by the ebb and flow of business: 1907, 1908, and 1909; 1913, 1914, and 1915; 1920, 1921, and 1922; and 1923, 1924, and 1925. By observing these four cycles the value of railroad gross earnings as a barometer of stock market conditions must be judged.

During the entire 25-year period studied here, the *moving average* of railroad gross earnings declined only four times: in 1908, 1914-1915, 1921-1922, and in 1924-1925. With one exception, 1914-1915, when gross earn-

ings declined, stock prices rose. One should not be led to the false assumption, however, that railroad earnings declined because stock prices rose.

It is commonly known that the stock market forecasts future earnings. If this is true, then the decline in railroad earnings which was just observed, had already been foretold by falling stock prices some months previous. The chart shows that many months before gross earnings declined, stock prices actually had been declining. But for the present study, the useful part of this relationship is that by the time gross earnings commence to decline, the stock market has about discounted the decline in earnings. In other words, when earnings decrease the stock market decline has been completed, and a rise, discounting larger gross earnings, is about to begin. When railroad gross earnings have started to decline, stocks have been a "buy."

Railroad gross earnings are not so emphatic in their indications to sell stocks. Often no mistake would have been made if stocks had been sold a few months after gross earnings had turned definitely upward, but this rule is hardly practical enough for use.

In 1911, 1912, and 1913 railroad gross earnings failed to function normally. Little was missed, however, since during these years there was no bull or bear market worthy of the name. Again in 1917-1918, due to the abnormality of the war years, gross earnings of railroads did not forecast accurately. During those years there was an even greater demand for transportation facilities. If one had been depending upon the indications of railroad gross earnings, he would have missed the bull market of 1919. Since then, however, conditions seem to have returned to normal, and the barometer seems to be functioning in better style.

It has been observed that in the past when railroad gross

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earnings figures turned downward stock prices were low; a few months after the *moving average* of earnings turned upward stock prices were often high. Since railroad gross earnings give indications of business activity in general as well as the railroad situation, these figures are as useful in gauging the trend of industrial stock prices as forecasting the prices of railroad stocks.

At present most industrials and railroads do not go to the trouble or expense of publishing net earnings figures frequently. This is mainly because it is almost impossible even by a budget system to include every item and judge every expense accurately for a single month. Such material, if available, would prove extremely useful in forecasting stock and business trends. Perhaps under the present movement for greater corporation publicity a system will be evolved by which data giving quarterly or even monthly net profits of concerns will be published. For the present, however, railroad gross earnings are the most satisfactory monthly earnings figures available.

SIZE OF DIVIDEND PAYMENTS

The question of the proportion of earnings which should be paid out in dividends has already been discussed. It was seen to be dependent upon three variable factors: first, the accuracy with which allowances have been made to insure the company against depreciation, depletion, and special hazards; next, the amount which the directors feel they can profitably reinvest in the company; and, third, the steadiness of the company's earnings.

Dividends are, of course, matters of public record. When the dividend payments of a number of concerns are grouped together the dividend policies of a large number of concerns are shown. One would suppose that when profits are large, directors would raise dividend rates;

and that when profits are small, they would lower the rates.

However, these results do not follow so closely as that, for directors do not increase dividends until they feel sure that the increased earnings are permanent. At the other extreme when earnings decline they will wait as long as possible before lowering the dividend. They know that cutting a dividend rate displeases stockholders and has a bad effect upon the company's credit position.

For a number of years dividends paid by railroads, public utilities, and industrial and miscellaneous companies have been compiled by the New York Journal of Commerce. In this way series of data are obtained which show great seasonal fluctuation since concerns usually pay dividends quarterly or semi-annually. The most popular months in which to make such payments are January, April, July, and October. In order to get a clear picture of the situation, extreme seasonal fluctuations must be removed. This is accomplished by taking a twelve-month moving average as the figure for the twelfth month, as was done with railroad gross earnings. Chart 6 shows the actual figures as black dots and the moving average as a heavy black line.

DIVIDEND PAYMENTS IN RELATION TO STOCK PRICES

Dividend payments of industrial and miscellaneous corporations have fluctuated in the past very closely with the ebb and flow of business activity. From 1905 to 1922 these cyclical movements were especially well defined. But since 1922 most companies have adopted a new policy in regard to paying dividends, for the cyclical fluctuation in the data either seems to have disappeared or to have been considerably reduced.

The most striking thing about dividend payments is that they generally move in the opposite direction from

stock prices. Through 1906 and 1907 they increased. During 1906 stock prices did not move either up or down, but in 1907 a severe bear market set in. Through 1908 and early 1909 dividend payments declined as stock prices rose sharply. From the middle of 1909 through 1910 dividend payments rose while stock prices generally declined. And so on throughout the period the *moving average* of dividend payments generally moves in the opposite direction from stock prices.

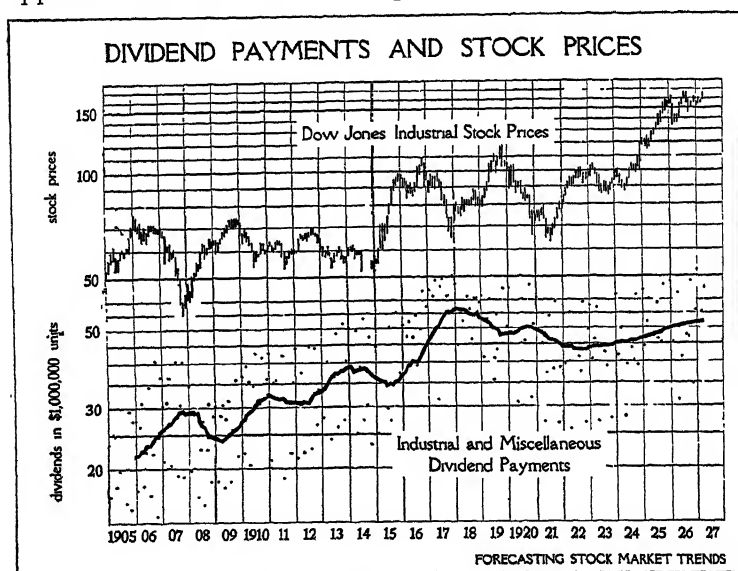


CHART 6

It is obvious from Chart 6 that the relationship between stock prices and dividends is an inverse one. In the past a drop in stock prices preceded falling dividend rates; rising stock prices were followed by higher dividend rates. But by following this situation in its logical order not much of value is obtained.

It is of no value in attempting to forecast stock prices to know that the movements of stock prices *precede*

other movements. One wants to know what happens to dividend payments *before* stock prices move either up or down. In this connection it is valuable to know that when the *moving average* moves upward, stock prices have generally been high; when the *moving average*, after a prolonged rise, flattens out and turns definitely downward, stock prices have generally been low.

CORPORATIONS CHANGE DIVIDEND POLICIES

Up until the year 1920 the relationship between stock prices and dividend payments was very regular. It is obvious that in 1920 and 1921 dividend payments did not describe the definite cyclical movement that they had previously shown. Moreover, since 1921 they have shown no cyclical movement whatsoever, and have merely been moving very gradually upward. This would lead one to believe that directors have learned a lesson in recent years regarding the advisability of maintaining steady dividends. They are realizing more than ever that earnings fluctuate widely, and it appears that in the future they are going to make sure that a dividend can be maintained steadily before it is declared. Such stability of dividends, if it is to become a fact, will work to the advantage of the common stockholder because from his point of view steady dividends are most desirable. But from the standpoint of using dividend payments in forecasting the stock market cycle, it is apt to eliminate this series of data from the list of good barometers.

It does not pay, however, to be too certain that the dividend-payment series will never again fluctuate in cycles. So far it has been impossible to flatten out the business cycle. Until such time as business does run along in an even groove the earnings of a company cannot be accurately predicted. And directors are bound to go wrong on their dividend policies. While at present

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dividend payments indicate that directors are unusually cautious in their dividend policies, they may abandon some of this caution in the future. In that case records of dividend rates will again serve as valuable indicators of stock market trends.

CHAPTER IV

Prices of Individual Commodities

SEVERAL thousand years ago there was no such thing as money. Each family in those ancient days was self-sufficient; everything necessary for existence was made within the family. There was no exchange of goods and there was no need for money.

The progress of civilization, however, soon demanded that man exchange goods. For, in discovering a proficiency in making a certain type of article, it was natural for a man to concentrate upon the manufacture of that article. He would in this way accumulate a surplus of one commodity, and at the same time realize a deficiency in many other commodities. It was then necessary for him to exchange his product for other products. So he hunted up a person who had a surplus of the article he needed and who, at the same time, needed the article he had to exchange. Goods were then exchanged against goods.

CATTLE MONEY

It was most difficult, however, to find a man who wanted just what a person had to exchange. But since there were a few articles like oxen or sheep which were in universal demand, it soon became customary to accept cattle in exchange, whereupon they in turn would be re-exchanged for the desired article. In accepting this one ever-desirable commodity as a medium of exchange it was no longer necessary to search for a single person who had what you needed as well as a need for what you had. The exchange of goods was given a tremendous impetus by this system of using a common medium of exchange. Man could devote more of his time to producing and less to exchanging.

In this manner our price system originated, for the price of an article would be the number of oxen or sheep required in exchange.

PEOPLE NEEDED BETTER MONEY

Oxen and sheep did not fully satisfy the monetary needs of the people, however. As the custom of exchange grew, a common money was needed which would be more durable, more easily divided into small parts, more stable in value, and more uniform in quality. In order to facilitate the rapid production and distribution of goods, metal money was used. Copper and gold rings first served as metal money. Then came coins of all kinds, later there were paper representatives of coins, and finally the credit money of today was originated.

As men specialized in making one commodity, the division of labor became increasingly complex and society became more dependent upon the exchange of goods. In order for men to specialize, and thus become more efficient producers, it became more and more necessary to think in terms of money incomes and prices. Instead of playing a minor rôle in effecting the exchange of goods, prices have become the most important single feature of the business system.

PRICES DETERMINE DEGREE OF PROSPERITY

In considering the aims of modern business men, the importance of price is at once apparent. Each business man from retailer back through middleman, transportation agent, and manufacturer to raw-material producer, tries to make the maximum return from his operations. In order to enjoy a profit he must buy the raw materials and sell the finished product at prices which will leave him a profit. Prices must be the first and last consideration of all business men.

INDIVIDUAL COMMODITIES FLUCTUATE DIFFERENTLY

Since the difference between cost and selling prices determines the profits of a concern, the trend of business profits is dependent upon the trend of prices. The trend of the stock market in turn is largely dependent upon the trend of business profits and hence, commodity prices are closely related to stock prices.

The prices of the many commodities used in commerce fluctuate in very different ways. The causes of these diverse fluctuations cannot be explained by one simple rule. It is only possible to present a few generalizations.

The price of a commodity is dependent upon three different things: the supply of the commodity, the demand for the commodity, and, not the least important, the amount of money which is in circulation and available for use in exchange for the commodity. These factors will be discussed briefly and will perhaps give a better understanding of price fluctuations.

MONEY IN CIRCULATION AFFECTS PRICES

Of the three factors, supply and demand for a commodity and amount of money in general circulation, the last-named is the one which affects all commodities at once and to approximately the same extent. When the amount of money in circulation increases or decreases suddenly, it raises or lowers the prices of almost all commodities in about the same proportion. These changes are particularly important, therefore, in that they change general price levels rather than the relationship between the price of one commodity and the price of another. Changes in the amount of money in circulation raise or lower the prices of all commodities simultaneously and to approximately the same extent.

There are many different kinds of money which facili-

tate the exchange of goods. Paper money—government notes, Federal Reserve notes, National Bank notes, and other common forms of paper currency in general circulation—and credit money in the form of bank checks, have the same power as actual gold to purchase goods. All of these various kinds of money must be taken into consideration in estimating the effect upon commodity prices of an increase or decrease in the amount of money in circulation.

WHEN MONEY IS ON A STRICTLY GOLD BASIS

Gold is the basis upon which most money is issued today. Formerly it was used only in its metallic form and passed in exchange for goods from hand to hand. It has been found more efficient, however, to issue paper representatives of the metal—so-called “notes”—and to keep the metal in reserve to be issued only when there is a specific demand for gold to redeem the notes. As long as there are no more paper representatives than there is gold, the monetary system rests firmly on a gold basis. If gold and its dollar-for-dollar paper representatives are the only forms of money in use, naturally the amount of money in circulation depends upon the amount of gold in existence. And since the amount of money offered for a commodity constitutes its price, the prices of commodities will fluctuate with the supply of gold metal.

The demand for goods and services is ever increasing with a growing population and rising standards of living. If the production of gold increased only as fast as the population demanded it for use, the relationship between money in circulation and commodities desired would remain constant. In other words, the general level of prices would be steady.

The production of gold, however, does not increase directly with the growing needs of our population. From 1816 to 1848 gold production was small, while trade was

increasing rapidly. Prices therefore declined throughout this period. In 1848 the discovery of gold in California and Australia increased the supply of gold, and prices rose. After 1864 the production of gold declined as the volume of trade steadily increased. As a result, prices fell until the middle 90's, when new discoveries of gold in the Rand, Africa, and in Alaska caused an increase in production which lasted until the outbreak of the war. During these years the general price level rose steadily.

CREDIT MONEY AFFECTS PRICES

The above observations have all been based on a consideration of the volume of money in circulation in direct relationship to the amount of gold in existence. The important fact that all money is not represented dollar-for-dollar by gold in national treasuries was not considered. But increases and decreases in amount of these other forms of purchasing power have as great effect upon prices as changes in supply of gold. National Bank notes, Federal Reserve notes, Greenbacks, and bank deposits created through the extension of credit by banks to individuals have exactly as much power in buying commodities as actual gold dollars have. Furthermore, the volume of these forms of money does not increase and decrease in amount directly with the needs of growing trade and commerce any more than the actual production of gold does. And when they do not increase or decrease proportionately to business needs, these forms of credit money also raise or lower the general level of prices.

FACTORS INFLUENCING INDIVIDUAL COMMODITY PRICES

Although fluctuations in the supply of all the different kinds of money change general price levels, they do not affect individual prices separately. In order to investigate the causes of changes in individual prices it is necessary

to understand the factors which influence the demand and supply of each commodity. Both the general price trend and the trend of individual commodity prices show long-time upward and downward movements. In the case of each individual commodity, however, these price changes are caused by changes in the demand or supply for that commodity.

On the demand side of the equation, changes in modes of living cause an increased demand for certain commodities and a decreased demand for others. Changes in demand thus cause the price of one article to rise and the price of another to fall.

Changes in supply also cause permanent changes in prices. If substitutes are introduced in place of an article already in use, the price of the original article will fall. Or if improvements in manufacturing processes are discovered which permits a lower cost of production, the long-time trend of the price of that commodity will ordinarily decline. On the other hand, depletion of the natural supply of a commodity like lumber is apt to cause the price of lumber to climb steadily upward until reforestation takes place or substitutes for lumber can be found. Thus the long-time price trend of each commodity is dependent upon the permanent factors which influence the demand and supply of that article.

SEASONAL PRICE MOVEMENTS

A few commodities have seasonal price movements. For instance, the supply of butter and eggs fluctuates widely in different seasons, while the demand for those articles remains fairly steady. Since these are commodities which cannot be stored indefinitely, and the supply fluctuates widely with the seasons while the demand is fairly constant, there are distinct seasonal movements in their prices. On the whole, however,

seasonal price movements are not important to consider, for they occur in relatively few commodities.

A consideration of those commodities whose prices change with business conditions is valuable in this study of the stock price movements caused by the ebb and flow of business. There are a number of factors which determine whether the price of a particular commodity fluctuates sympathetically with general business conditions. There are also many factors which determine the magnitude of the price fluctuations of each commodity. A few generalizations can be made which will help to explain why some commodities follow the trends of business and others do not, and why some fluctuate more widely than others.

DISTANCE FROM CONSUMER AFFECTS PRICES

The distance a product has to travel to its ultimate consumer plays an important part in determining the magnitude of its price fluctuations. The consumer creates the first demand for a commodity. This is then transmitted through wholesalers and manufacturers back to the raw-material producers. The more complicated and lengthy a manufacturing process is, the more difficult it is to estimate accurately just what the actual demand will be when the finished product reaches the final consumer. An increase in the difficulty of determining the whims of the final consumer increases the width of price fluctuations at each manufacturing stage. Thus price fluctuations are widest in raw materials where the difficulty of judging consumer demand is greatest, less wide in producers' goods, and very small in consumers' goods, where retail merchants can closely match consumers' demand with supply.

OTHER FACTORS AFFECTING PRICES

Nature herself plays a part in determining the magnitude of price fluctuations. The disappearance of a

natural source of mineral ore will naturally cause the price of that mineral to rise. And again, a large crop of wheat throughout the world will cause the price of wheat to be low. Nature plays a most important rôle in determining the price fluctuations of many commodities.

There are other factors which influence the magnitude of price changes in individual commodities. A new manufacturing unit might be so slow in getting under way that the demand for which it was built will have died. Overproduction at some times and underproduction at others will result in correspondingly wide variations in prices. Again, it may be more profitable in some industries to keep plants going at a loss in order to offset large overhead costs or in order to keep a skilled working force in the employ of the company. In these cases overproduction will tend to become most acute at times and large price variations will result.

This brief survey has shown to some extent the wide variety of factors affecting prices of various commodities. The distance of the article from the final consumer, natural changes in the supply of materials, and the length of time taken to build new manufacturing plants all have their influence upon the width of price fluctuations. Of these, the distance the commodity must travel to get to the final consumers is probably the most common influence. Raw materials are far from the consumer and they fluctuate most widely in price; producers' goods are several steps away from the final consumer and they fluctuate almost as much; consumers' goods are the first step away from the consumer and fluctuate least.

WHOLESALE PRICES MORE USEFUL THAN RETAIL PRICES

In selecting statistics which will show most clearly the fluctuations of the business cycle, it is natural to rely on the prices of those commodities whose prices are most

sensitive to periods of prosperity and depression. In order to do this it is necessary to consider the prices of raw materials rather than the prices of finished products, because their prices are more sensitive to changing conditions.

But further than this, it is desired to show the conditions of the stock market in general. In other words, in selecting a commodity which will be used to gauge the entire market, it is necessary to choose one which fluctuates with general business conditions.

It will be impossible within the scope of these chapters to consider all of the commodities whose prices might have barometric value in forecasting the trend of the stock market. From the countless series of prices it is necessary to select those of a few of the more basic commodities. Instead of taking many similar price series from a single industry which seems to be unusually sensitive to the trend of the stock market, prices from several of the larger industries have been taken. For example, prices taken from the steel industry are exceptionally useful in judging the trend of stock prices, but other price series than those of iron and steel products must be considered if one is to obtain a broad and comprehensive understanding of the value of prices in stock market forecasting. Although only those commodity prices which seem to give the clearest conception of price fluctuations in forecasting are to be considered, it is possible for anyone interested to go further into the subject of prices and find many other commodities which are useful barometers.

COMMODITIES WHICH FLUCTUATE WITH BUSINESS

Those commodities whose prices seem to fluctuate most closely with business prosperity and depression have been classified by Prof. Warren M. Persons and Eunice S.

Coyle of the Harvard Committee on Economic Research. They have taken more than three hundred commodities used by the United States Bureau of Labor Statistics and studied their price movements, comparing the price of each commodity with the movement of all commodity prices. Although most of these commodities did not synchronize closely with the fluctuations in business activity, the prices of a few of the commodities examined did move closely with changing business conditions. These commodities were:

Hogs, sheep, cotton, silver bars, tin, drillings, gingham, sheetings, women's dress-goods, silk, steel sheets, calf leather, harness leather, sole leather, women's shoes, steel billets, bacon, hams, lard, shirtings, denims, cotton yarn, and suitings.

But even more reliable for purposes of judging business conditions were found to be the following:

Cottonseed oil, coke, zinc, pig iron, bar iron, pork (mess), hides, cotton print cloths, sheetings, and worsted yarns.

An attempt will be made to present an explanation of the price fluctuations of these commodities based upon the generalizations made in the first part of this chapter. An understanding of the significance of the above ten commodities may also help to determine whether or not other commodities are suitable for the purpose of forecasting stock market movements.

The relationship between individual commodity prices and the stock market will be a surprise to many, for it is generally believed that rising commodity prices mean larger profits and therefore higher stock prices. The facts show, however, that a broad general rise in commodity prices signifies smaller profits and lower stock prices. In other words, when commodity prices rise sharply, stock prices generally fall; when commodity prices fall, stock prices usually rise.

COKE USED IN MAKING IRON AND STEEL

The discussion will be introduced by an investigation of coke as a commodity. Coke is the residue left when coal has been deprived of the greater part of its hydrogen, oxygen, and nitrogen. Coke bears the same relation to coal that wood charcoal does to wood. An increasing amount of coke is being produced as a by-product and a decreasing amount in beehive ovens. The best coke, however, is obtained by heating coal to a high temperature in a closed vessel or coke-oven. Coke is mainly carbon. It is difficult to ignite, but once ignited it burns with great heat and without smoke. This, together with the fact that it unites in chemical reaction, makes it valuable for metallurgical purposes and for use in factories in towns where a smokeless flame is desirable. The value of coke produced in the United States is about half the value of anthracite coal produced, and about one-quarter the value of bituminous coal produced.

Coke is also a raw material used in the manufacture of many basic commodities. The iron and steel industries, for example, are dependent upon coke as a source of carbon, an important component in their manufacture. For this reason, and because it is used in the manufacture of many other basic commodities, its price fluctuates with general business conditions. In serving as a raw material in a fundamental process, coke is a very long way from the ultimate consumer—the man who buys a steel window fitting, for instance—and therefore its price fluctuates widely.

In order to show the relationship between the price of coke and stock prices the two series are shown together in Chart 7. It is obvious that the actual figures showing coke prices fluctuate rather widely and erratically. In order better to determine the trend of prices, a twelve-month moving average has been used. This is the heavy

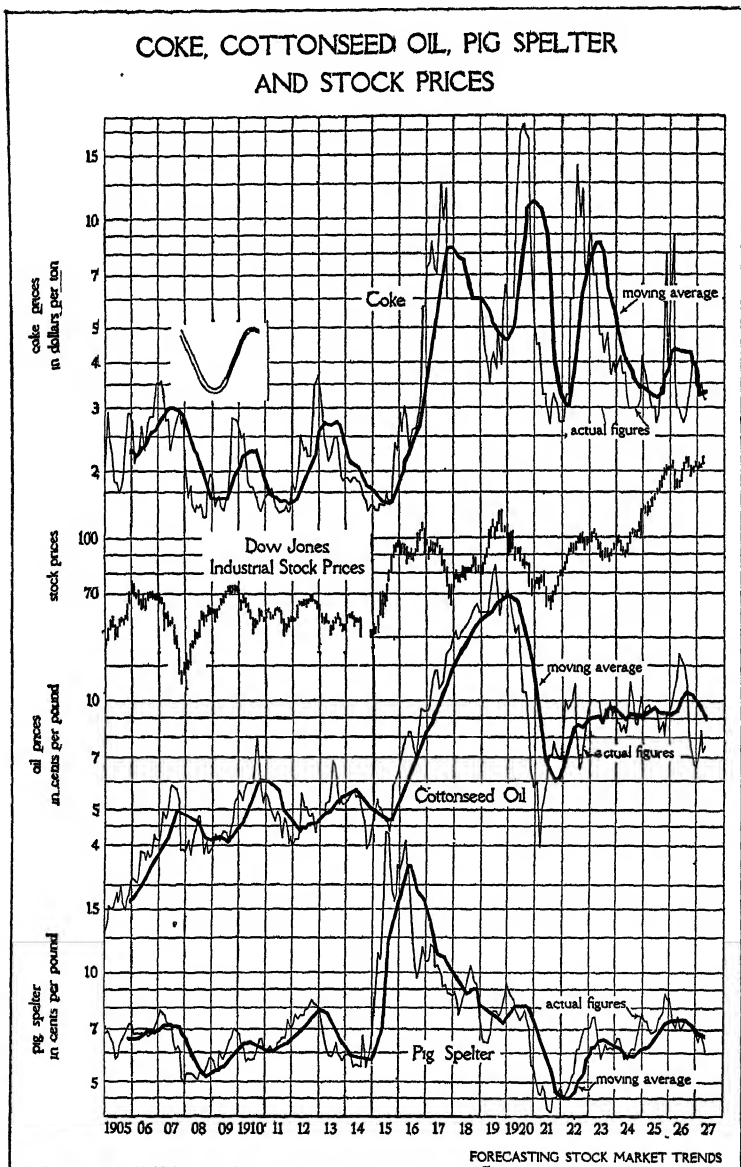


CHART 7

black line in the chart. It is much steadier than the line showing the actual prices of coke. It is this moving-average line that is particularly useful for present purposes.

COKE PRICES RELATED TO STOCK PRICES

Coke prices are definitely related to the stock market. When the *moving average* of coke prices is declining, stock prices are generally rising; when the *moving average* of coke prices is rising, stock prices are generally declining. A curve showing one complete typical cycle of coke prices is shown on the chart. This sample cycle might be called an *average* cycle of coke prices, for while it does not necessarily represent any particular cycle, it is made by taking the average of the figures for all cycles both as to length and magnitude of the price swings. That part of the cycle of coke prices during which stock prices were generally rising is shown on the sample cycle by the open line; that part of the cycle of coke prices during which stock prices were generally declining is represented by the black part of the line.

The value of coke in telling when to sell stocks is considerable. As a rule, no mistake would have been made if an upward turn in the *moving average* of coke prices had been taken as a signal to sell stocks. Such an event generally promised lower stock prices. And the further coke prices rose, the greater was the danger that stock prices would decline.

This series is also able to indicate advantageous times to buy stocks. It is clear in following the *moving-average* line across the chart, that if one had chosen to buy stocks when the line turned downward, he would have approximated the lowest level of stock prices. It would also have been safe to hold the stocks until the line again turned upward.

The periodic strikes in the coal industry naturally have

a decided effect upon coke prices, and this factor must be watched closely in using coke as a barometer. A recent illustration of this was early in 1926 when coke prices rose from \$4 in December, 1925, to \$9 in the following February. This sharp rise caused the *moving average* to fluctuate unnaturally for several months afterwards. In using this barometer currently it is necessary to make allowances for just such events.

COKE PRICES MOVE INVERSELY WITH STOCK PRICES

On the whole, however, this *moving average* of coke prices is very useful in determining the trend of stock prices. When the *moving average* was declining, stock prices generally rose; and when the *moving average* rose, stock prices fell. At the particular time that the *moving average* of coke began to rise, stocks were a "sale"; when the *moving average* began to fall, stocks were generally a "buy."

The *actual figures* of coke prices are also useful in choosing the turning point for stock prices. Whenever an unusually sharp upward or downward move occurred, if these sharp movements were not caused by a strike or some other unusual event, they almost invariably signaled a change in the trend of the stock market. A very sharp rise in the *actual figures* meant that lower stock prices were in prospect, and a very sharp fall in the *actual figures* meant that higher stock prices were ahead.

COTTON SEEDS BECOME VALUABLE BY-PRODUCT

Until about 1870 cotton seeds were a source of annoyance around the plantation. There was about 5000 pounds of cotton seeds to every 500 pounds of cotton. The seeds were often discarded or burned as fuel.

It was not long, however, before cotton seeds became a valuable by-product of the cotton industry. The

seeds, after the hulls had been removed, were found to make exceptionally fine fuel. Today even the hulls themselves are used in the South as fodder for cattle. The residue was found to be valuable as a fertilizer, especially in growing tobacco.

But more important uses for cotton seeds than these have been discovered. Cottonseed oil, an oil extracted from the hulled seeds, is by far the most important by-product today. Its relative importance is shown in the following table:

Cottonseed products	% of Total Value
Cottonseed oil.....	52.7%
Meal and coke.....	32.8
Hulls.....	5.7
Linters.....	8.8
<hr/>	
Total value.....	100.0%

Cottonseed oil is used as a substitute for olive oil. It is also used with beef products in the manufacture of margarine and compound lard. The manufacture of lard consumes one-third of all the cottonseed oil produced in the United States. The poorer grades are used in the manufacture of soap, candles, and phonograph records. Cottonseed oil is also blown in large quantities and used as a lubricant after admixture with other lubricants.

UNSTEADY SUPPLY CAUSES ERRATIC FLUCTUATIONS

This gives an idea of some of the factors which influence its price. Since cottonseed oil is used largely as a raw material in the manufacture of such things as salad oil, lard, margarine, soap, and candles, the demand fluctuates with consumer demand for those products.

While most of the cottonseed oil produced is used as a raw material in manufacturing articles whose demand does not fluctuate widely, the supply of oil is not corre-

spondingly steady. The amount produced is dependent upon the size of the cotton crop. Thus fluctuations in demand, even though slight, together with the indeterminate supply, cause wide fluctuations in the price.

BAROMETRIC VALUE OF COTTONSEED OIL MINIMIZED

As an indicator of the trend of the stock market, cottonseed oil will probably be the least valuable of the ten commodities to be examined here. The main reason for this is that its uses have changed radically in recent years. Its price movements, however, do move in a broad way with the swings of general business conditions and the stock market. In general, as may be seen from the chart on page 60, when the *moving average* of the price of cottonseed oil has completed about half of its rise in the course of a cycle, stocks commence to decline. Usually by the time the *moving average* turns downward stock prices are at low levels. When the cottonseed-oil *moving average* is in the lower half of its cycle movement, stock prices are generally rising. The peak of stock prices occurs, as a rule, after the *moving average* turns definitely upward.

PIG SPELTER, THE COMMERCIAL NAME FOR ZINC

Pig spelter, the commercial term for zinc, had been used for many years in the manufacture of brass before it was considered a separate metal in the year 1510. Although sometimes found unmixed with other metals, it is generally obtained for commercial purposes by crushing, roasting, and distilling the ore "blende." Pig spelter is used in desilvering lead, galvanizing iron sheets and telegraph wire, in the construction of electric storage batteries, in the manufacture of dyestuff and paint, in precipitating gold, in medicine, and in the manufacture of brass, German silver, and other alloys.

Because of its numerous commercial uses, the price of pig spelter fluctuates with general business conditions and the stock market. The actual prices and a moving average of prices of pig spelter are both shown on Chart 7. These lines show erratic price movements without any definite long-time trends. However, the curve exhibits cyclical fluctuations with the ebb and flow of business.

PIG-SPELTER PRICES DO NOT GIVE DEFINITE SIGNALS

In general, when the *moving average* of pig-spelter prices is completing the lower part of a cycle move and begins to rise, a favorable period for stock prices is indicated. When the *moving average* turns downward it indicates an unfavorable period for stock prices which will usually continue until the *moving average* is well on its way down.

The prices of this commodity have been fairly accurate indicators of the stock market trend except during the years of the war and through 1919 and 1920. Both pig spelter, and cottonseed oil, however, serve more as supporting evidence of forecasts already made than as forecasting agencies themselves. There is no forewarning of an impending turn in these figures until they have definitely turned, and from the stated relation between these commodities and stock prices, if they are to be directly useful, it would be necessary to know when they are going to change direction.

From the consideration of the prices of coke, cottonseed oil, and pig spelter in this chapter, it is clear that if properly used and understood, their price movements are useful in determining the trend of the stock market.

Especially valuable is coke, since the price fluctuates directly with general business activity. Coke prices move in wide cycles and have a very definite relationship

to stock prices. When the *moving average* of coke prices rises stock prices usually decline, and when it declines stock prices usually rise. This series will be considered again in the next chapter, when three of the most useful commodities will be combined to make a forecasting line.

CHAPTER V

Prices of Individual Commodities

(Continued)

THE trend of the prices of many basic commodities indicates accurately whether business is active or dull at any particular moment. The prices of such commodities are also directly related to stock market movements and are useful in forecasting the market trend.

Mess pork is one of the commodities which has been found by Prof. Warren M. Persons and Eunice S. Coyle to fluctuate with general business conditions. Since it bears this definite relationship to business prosperity, it is probable that it is useful in gauging the trend of the stock market.

PORK IN THE DAILY DIET

One-half of all the meat produced in the United States is pork. The importance of this commodity in the daily diet may further be noted from the following table showing per-capita consumption of various kinds of meat:

	Per-capita Consumption in pounds
Beef.....	62.1
Veal.....	8.7
Mutton and lamb.....	5.2
Pork.....	75.8
All meats.....	151.8

The consumers' demand for pork fluctuates closely with business prosperity and depression. When business is good the demand for pork increases and the price tends to rise. As business becomes dull, the demand decreases and the price tends to fall. On the other hand, the

supply of pork is not affected by business conditions. These characteristics of mess-pork prices cause cyclical fluctuations which are useful in forecasting stock prices.

The erratic monthly and seasonal price fluctuations have been smoothed out by using a moving average. The figures are shown in Chart 8.

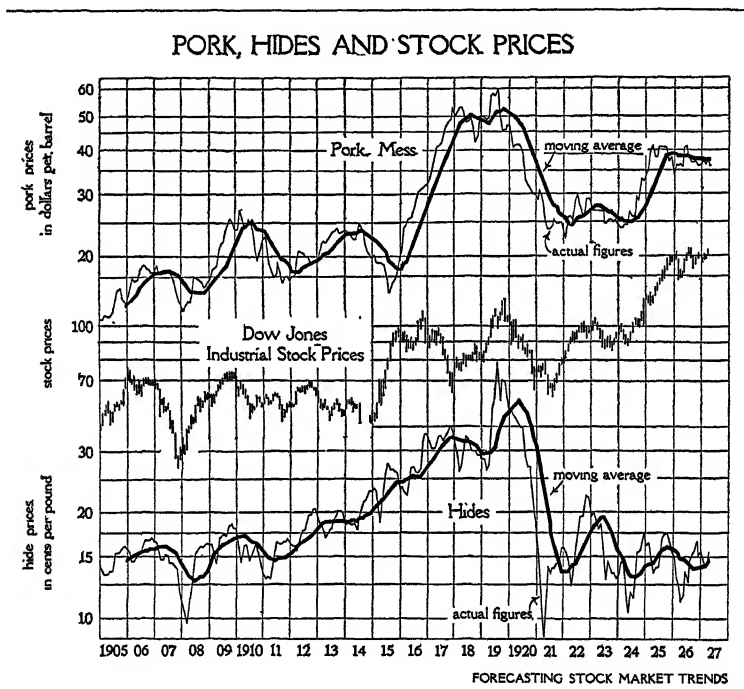


CHART 8

Stock prices are generally rising when the *moving average* of mess-pork prices is falling and completing the lower half of a cyclical movement. A few months after it turns upward, stock prices generally reach a peak; and as the *moving average* continues upward, stocks decline. Of the occasional exceptions to these rules the most conspicuous occurred in 1920 and 1925. On the whole, how-

ever, a decline in the *moving average* of mess-pork prices has marked a period favorable to the buying of stocks; a rise has occurred at times when it would have been advisable to sell stocks.

HIDE PRICES RESPOND MODERATELY TO BUSINESS CONDITIONS

Hide prices have occasionally shown a relationship to the trend of the stock market. The supply of hides is not easily controlled because of its dependence upon the raising of cattle, a relatively long process and one subject to natural hazards. On the other hand, the demand for leather is fairly constant. About 80% of all leather and skins produced is used in the manufacture of boots and shoes. A wide variety of articles commands the rest of the supply. However, the demand fluctuates widely enough between periods of good and bad business to cause cyclical movements in hide prices.

Before 1911 these fluctuations were rather definite. From 1911 until 1920, however, there was a steady increase in hide prices with only slight cyclical movements, followed by an extremely violent drop in the next two years. Since then the price has again been fluctuating in distinct cycles. Although there are better barometers of the stock market, it is interesting to notice that these prices at times fluctuate in unison with stock prices. When the *moving average* of hide prices shown in Chart 8 is completing the lower half of its cycle, stocks are often rising; when the *moving average* is turning the upper part of its cycle, stocks are apt to be declining. At times, however, these cyclical movements are very indefinite, as in the period from 1912 to 1917.

WORSTED YARNS MAKE BETTER-GRADE CLOTH

The textile industry furnishes at least three series of prices which bear significant relationships to the trend

70 FORECASTING STOCK MARKET TRENDS

of business activity. The prices of worsted yarns, print cloths, and sheetings, as shown on Chart 9, are closely

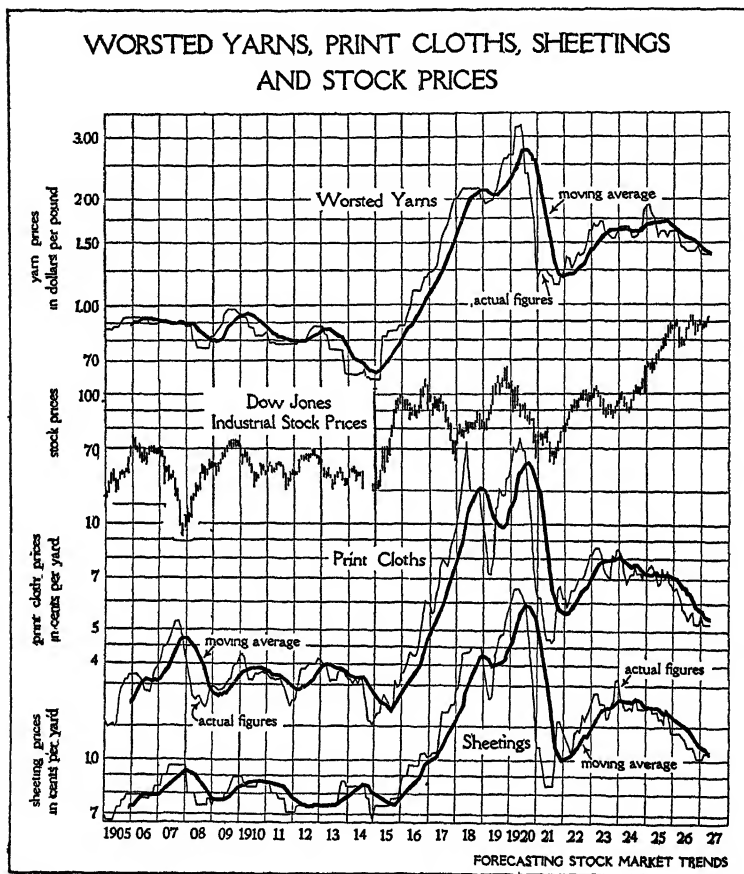


CHART 9

related to business activity, and presumably are related to the oscillations of the stock market.

Worsted yarn is the better grade of yarn made from wool. Since it is used principally for clothing, the demand fluctuates with the demand for clothing. It should be

observed, however, that the demand for woollen clothing as compared with cotton clothing comes from the more prosperous classes whose money incomes do not fluctuate so violently with business conditions. The demand for worsted yarn does not fluctuate so widely, therefore, as the demand for cheaper grades of cloth.

Since the supply of wool does not show any wide variations either, the price fluctuations of worsted yarns are rather moderate.

The cyclical movements which do occur in worsted-yarn prices, however, even though they are not very violent, are helpful in forecasting the stock market. Often when the *moving average* of worsted yarns is declining and completing the lower turn of a cycle, stock prices are rising. When the *moving average* rises sharply, and while it is making the upper turn of a cycle, stock prices are often declining. As a rule, a few months after the *moving average* turned upward, stocks were high and it would have been advantageous to sell; a few months after it declined stocks had been low, and it would have been profitable to buy.

PRINT CLOTHS, SHEETINGS, AND COTTON RELATED

The prices of print cloths and sheetings are naturally related to the price of their principal raw material, cotton. The margin between the price of cotton and the price of the print cloths or sheetings, covers the expense of manufacturing and the manufacturer's profit. Since the expense of manufacturing varies with general business conditions, the prices of print cloths or sheetings are more sensitive to business changes than the price of raw cotton is.

Print cloth is a plain, standard cotton cloth. A large trade is carried on in this commodity abroad as well as in the United States. The manufacturing centers

are Burmley, England, and Fall River, Massachusetts. After print cloths have been woven, they are sold to other mills, or "converters," where they are colored or printed. The finished product is used for the most part in the manufacture of women's clothing.

Notwithstanding its indirect dependence upon the cotton crop, the supply of print cloths is affected radically by the economic position of the manufacturer. The demand varies with changes in style as well as with the movements in general business conditions. This cloth is used in the manufacture of cheaper grades of clothing where the demand is sensitive to changes in business prosperity or depression.

A *moving average* of print-cloth prices may be used in stock market forecasting. Frequently when the *moving average* is declining and while it is turning upward, stock prices are rising. When it is rising and even while it is turning downward, stock prices are frequently falling. There have been conspicuous exceptions, as in 1915 and 1922, but, as a general rule, one would not have made a serious mistake in selling stocks just after the *moving average* turned definitely upward after a long decline, or in buying stocks just after it had turned downward after a prolonged advance.

Since the price of cotton sheetings fluctuates similarly to print cloths, the relationship of sheeting prices to the stock market is almost identical with that of print cloths. A declining *moving average* of sheeting prices frequently means rising stock prices; a rising *moving average* frequently means lower stock prices.

TRADITIONAL BAROMETERS

There are two other price series which are the most useful of all as barometers of the stock market: the prices of iron and steel. They are not subject to unusual or

erratic changes in supply or demand to the same extent as are many other commodities. The relationship between iron and steel prices and general business conditions is so close that today they are almost inseparable. Conditions in one give an accurate indication of existing conditions in the other.

Before discussing the prices of bar and pig iron separately as stock market barometers, it is well to examine the steel industry as a whole. The importance of the industry has been so universally proclaimed that it seems necessary here only to review those basic factors which influence the prices of iron and steel.

Iron is used extensively in almost every industry. It is a raw material, requiring long and expensive manufacturing processes before it reaches the ultimate consumer. Its importance in relation to other metals is evidenced by the following figures showing the value of mineral products in the United States for 1925:

		% of Total
Pig iron	739,316,000	53.60%
Copper	\$237,735,000	17.23
Iron (ore)	160,951,000	11.65
Lead	113,956,000	8.25
Zinc	84,456,000	6.12
All others	43,686,000	3.15
Total metallic products	\$1,380,100,000	100.00%

Because iron is used in some form in practically every industry, its price fluctuates closely with general business conditions. It is, therefore, one of the best indicators of the trend of the stock market.

IRON AND STEEL MADE FROM PIG IRON

The iron-carbon compound which flows to the bottom of the blast furnace filled with coke, ore, and flux is

periodically drawn off into sand moulds to form rough castings called pig iron. For the first time in the process of manufacture the metal is definitely recognizable as iron. The processes through which this pig iron must pass to become bar iron or steel consist either of removing impurities and then submitting the metal to various treatments for different uses or of actually shaping the purified iron or steel into a finished product. Since all iron or steel, whatever their final form, must pass through the pig-iron state, pig-iron prices are a direct reflection of conditions throughout the entire industry.

Pig iron contains about 5% impurities, chiefly carbon, phosphates, sulphur silicon, and manganese. The presence of phosphorous or sulphur causes the iron to be brittle and it is by means of a "puddling" furnace that such impurities are eliminated. The metal is then rolled into bars called "iron bars" or wrought iron, which, because of their purity, may be reheated and reworked easily. Bar iron is used for a great number of purposes like smithing, which require a malleable iron.

PIG IRON AND BAR IRON EXCELLENT BAROMETERS

Pig-iron and bar-iron prices can be considered together because the trend of their price movements is so similar. Taken together or singly they are more useful as barometers of conditions in the stock market than any other price series which have yet been found in this investigation. The prices of both show very distinct cyclical movements, whose relationship to the stock market, as is true of most price movements, is exactly the reverse of what one would expect. Chart 10 shows that when the *moving averages* of the prices of bar iron and pig iron are declining, stock prices are generally rising and when the *moving averages* of the prices of these metals are rising, stock prices are usually declining.

As a means of forecasting the broad swings of the stock market, this inverse relationship is most useful. Even through the period of war inflation, these iron price barometers gave dependable indications of the trend of the stock market. Almost without exception, when the *moving averages* declined, the general trend of the stock market was upward; and when they rose, stocks declined.

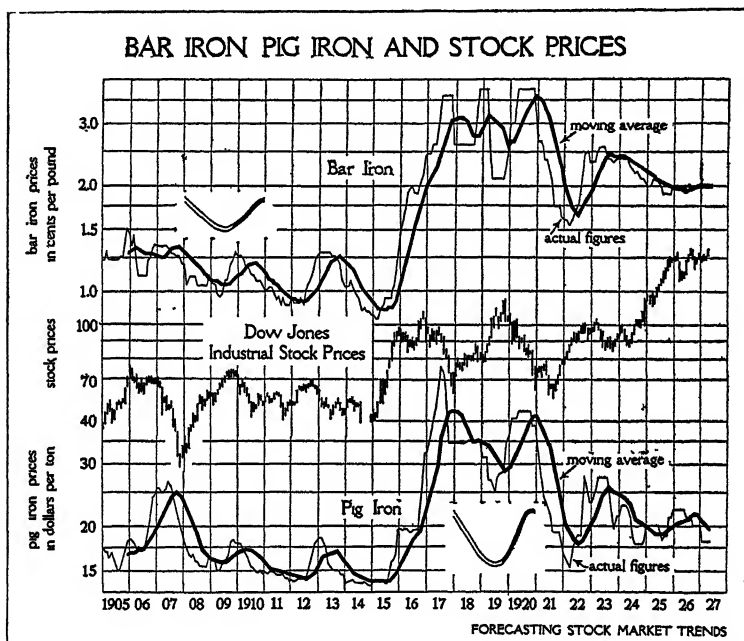


CHART 10

It may also be noticed that the *actual prices* of iron, before a moving average was constructed, also give indications of stock price movements. Whenever a sharp rise in either bar or pig iron occurred, stock prices were at a high level; and whenever iron prices declined sharply, the stock market was usually at a low level.

THE THREE MOST RELIABLE PRICE BAROMETERS

Of the ten series of commodity prices here considered, it has been observed that coke, pig iron, and bar iron are the most reliable because of the regularity with which they fluctuate with stock prices. Any one of these three series could be used individually in forecasting, so constant is the inverse relationship between them and the stock market. When the *moving averages* of coke, pig iron, and bar iron decline, the stock market usually rises; when they rise, the stock market generally falls. All three seem to bear exactly the same relationship to the stock market. It would seem then that if the *moving averages* of all three price series were combined to form a single barometer, such a barometer would be more reliable than any one of the series used individually.

TREND OF PRICES THE IMPORTANT CONSIDERATION

Throughout the discussion of commodity prices in relation to stock prices, it has been evident that for barometric purposes, except when a sharp rise or fall in price gave a "sell" or "buy" signal, it was more important to know whether the price of a commodity was rising or falling than to observe how far it had risen or fallen. In other words, the *trend* of commodity prices was more important than the *magnitude* of the rise or fall.

A combination of the *moving averages* of coke, pig-iron, and bar-iron prices which would indicate the trend rather than the magnitude of their combined fluctuations should prove an even more valuable indicator of stock market trends than a *moving average* of any single one of those commodities. If, for instance, the price of coke was declining while the prices of pig iron and bar iron were rising, it would seem logical to consider that coke prices were moving against the general trend. Likewise, if the

prices of coke and pig iron were both declining while the price of bar iron was rising, it would appear that bar-iron prices were moving contrary to the general trend. The majority of cases, that is, two out of three, would seem to indicate the general tendency.

A STOCK MARKET FORECASTING LINE

There is an inverse relationship between each *moving average* and the stock market. Therefore, when two or

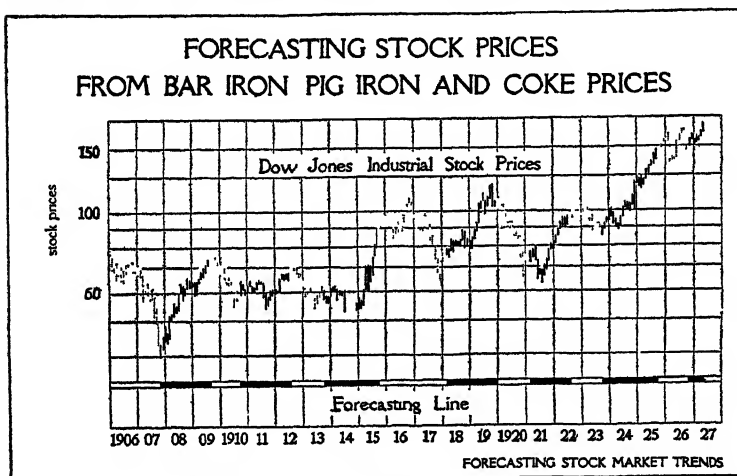


CHART 11

This "forecasting line" is so constructed that a period of rising stock prices is indicated when two or more of the moving averages of pig iron, bar iron, and coke—centered on the twelfth month—declined; a period of falling stock prices is indicated when two or more of these moving averages rose.

more of these rise, the stock market would usually be expected to decline; and when two or more fall, the stock market would be expected to rise. Upon the assumption that the trend of prices of a majority of these three very good barometers should more accurately indicate stock market movements than any of them individually, a "forecasting line" has been constructed.

No great degree of mathematical accuracy is claimed for the forecasting line presented in Chart 11. It seems sufficiently useful, however, to be worth following currently. A rough calculation shows that through the use of such a forecasting line the investor who bought the stocks used in the Dow Jones industrial averages when the "majority" of the moving averages of coke, pig-iron, and bar-iron prices began to decline and sold them when the moving averages began to rise again, would have three times as much capital at the end of the period as the investor who bought the same stocks and held them constantly throughout the period. In other words, the investor with \$10,000 would have increased his capital to more than \$120,000 instead of from \$10,000 to \$40,000. This is only a rough estimate and it makes no allowance for the greatly increased income he would have obtained by "shifting" his investments. However, it shows how important it is for the investor to consider the trend of the stock market.

AN ACCURATE FORECASTER

A forecasting line, constructed according to the methods outlined above, is shown at the bottom of Chart 11. When the forecasting line indicates rising stock prices, it is represented by a solid black line; when it indicates falling stock prices, it is represented by an open line. When the barometer is forecasting rising stock prices, the stock market trend is represented by heavy black lines.

By glancing over the part of the stock market shown in solid black, the accuracy of this forecasting line becomes apparent. Except for the year 1919, it would have been better to sell stocks about three months after the *moving average* of prices of the majority of these three commodities had turned upward, rather than to sell stocks immediately after this bearish indication had been given.

Of all the statistical series so far discussed, it is evident

that these three—coke, pig-iron, and bar-iron prices—are most valuable to the person interested in judging the trend of the stock market. Other valuable barometers will be found later, but here it should be emphasized that because they are most typical of general business, these three series have given very reliable “buy” and “sell” indications.

CHAPTER VI

General Price Levels

THE prices of individual commodities fluctuate in widely divergent directions. Some rise while others fall; some fluctuate widely while others remain quite steady. But when these individual commodities are grouped together to estimate the general level of all prices, individual variations and fluctuations disappear. Only the broad upward or downward price movements caused by business prosperity or depression and the sharp changes caused by inflation or deflation of the currency are apparent.

IMPOSSIBLE TO SET "NORMAL" PRICE LEVEL

Frequently an attempt is made to estimate a "normal" level for general commodity prices. The general price level which existed during the year 1913 is frequently taken as "normal." The uncontrollable variations in the value of a dollar, however, make any such attempt to set a standard price level practically meaningless, because the real value of the dollar varies so greatly from one decade to another that what may be considered normal in one period is far from normal in another. In forecasting the trend of stock prices from commodity prices, therefore, little attention will be paid to price levels. For forecasting purposes it is more essential to study the changes from one price level to another than to try to measure accurately the level of prices at any given time.

While there are various ways of measuring changes in general price levels and many different commodities are

used in the attempt, it is significant that practically all standard indexes fluctuate in close agreement with one another. This characteristic, as shown in Chart 12, indicates that almost any index is accurate enough for all practical purposes.

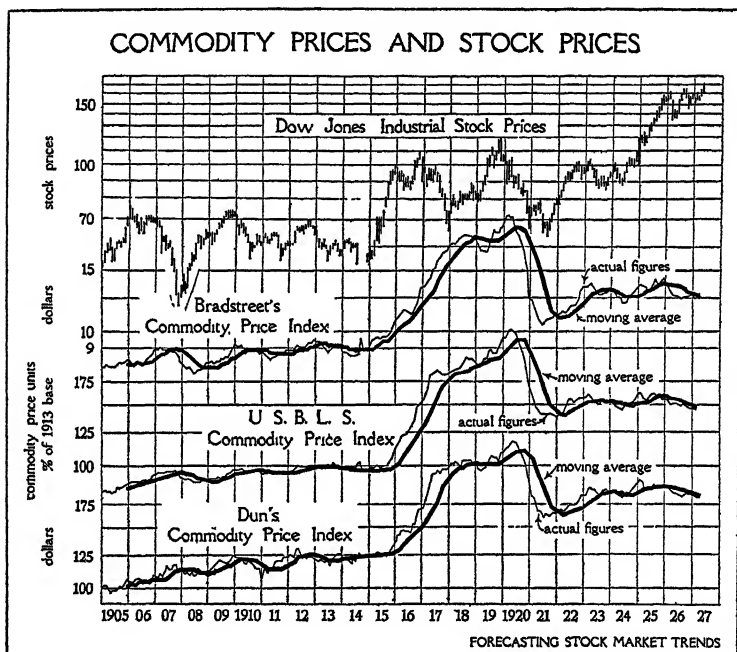


CHART 12

The prices of producers' goods, used in the further production of goods, fluctuate more than consumers' goods ready for final consumption; wholesale prices fluctuate more than retail prices. Since wholesale prices are more sensitive to changes in general business conditions, the most useful barometers for forecasting purposes are obtained from them. Four standard index numbers of wholesale prices will be discussed in this chapter.

THE MOST COMPREHENSIVE WHOLESALE PRICE INDEX

The United States Department of Labor, Bureau of Labor Statistics, compiles a most comprehensive monthly index showing the general level of wholesale prices. The prices of 404 different commodities are placed in groups of like commodities and "weighted" according to their value in the total trade of the country. There are nine of these groups, which will be examined only briefly because, for present purposes, the index as a whole is most useful. A consideration of the individual groups will, perhaps, give a better understanding of how index numbers are constructed. The respective groups are worth more careful study to anyone interested in a particular industry.

The various groups in the United States Bureau of Labor Statistics Index are:

Group:	No. of Commodities	Group Weights
Farm products.....	56	26.80%
Food.....	95	22.19
Cloths and clothing.....	65	9.48
Fuel and lighting.....	20	17.37
Metals and metal products.....	37	7.61
Lumber and building material.....	32	5.28
Chemicals and drugs.....	43	1.67
House furnishing goods.....	31	3.35
Miscellaneous.....	25	6.25
	<hr/> 404	<hr/> 100.00%

FARM PRODUCTS AND FOOD DOMINATE INDEX

Of the wide variety of commodities used, farm products and food, because of their group weightings, are most important. Indeed, these two groups account for 48.99% of the weighting for the entire index. In other words, changes in the price of farm products and food are considered almost as important as changes in the prices of all other commodities combined.

This characteristic of the index is undesirable in gauging stock market trends, for the prices of farm products and food do not reflect general business conditions. Those prices are affected to a greater extent by weather conditions and the foreign situation. Because of the inclusion of such commodities, any wide cyclical movements occurring in the prices of commodities more sensitive to business conditions like iron, steel, or coke are greatly moderated by the important influence given to farm products and food in the index.

BUSINESS ACTIVITY AFFECTS OTHER GROUPS

The other groups, however, do fluctuate in varying degrees with the business cycle. For instance, minerals and fuels are desired by manufacturing and construction concerns whose demands are affected greatly by business conditions. The demand for lumber and building materials also varies with business activity. Thus all of the groups, when combined, even though burdened with the farm products and foodstuffs groups, undergo cyclical fluctuations which seem to bear a relationship to the trend of the stock market.

DUN'S INDEX MEASURES COST OF YEAR'S SUPPLY

Dun's Index of Wholesale Prices attempts to measure the cost of a year's supply of about 300 commodities needed for one man's personal use. Each commodity is weighted according to the amount consumed per capita in the country. For instance, the January, 1927, figures given by Dun's will represent the approximate amount of money needed in that month to purchase a year's supply of 300 commodities for one person. The February figures will show the amount needed to buy a year's supply of the same commodities at February prices. This index gives a comparatively heavy weighting to food products.

Dun's Index includes the following commodities:

Breadstuffs
Meats
Dairy and garden products
Other foods
Clothing
Metals
Miscellaneous

No information is published concerning the methods used in compiling the figures. For this reason, Dun's Index must be accepted upon the accuracy with which it has measured price levels and fluctuations in the past, as compared with other indexes, rather than upon an understanding of the methods used in its computation.

BRADSTREET'S MEASURES PRICES PER POUND

Bradstreet's Index of Commodity Prices is obtained by lumping together the prices per pound of 96 different commodities. Those commodities not quoted "per pound" are reduced to that unit. On the first day of each month the prices of the 96 commodities are added to give a total figure for 96 pounds of conglomerate com-

	No. of Commodities	Approximate % of Group Prices to Total Prices
1. Breadstuffs.....	6	.8
2. Livestock.....	4	3.0
3. Provisions.....	24	25.2
4. Fruits.....	5	2.1
5. Hides and leather.....	4	9.8
6. Textiles.....	11	33.3
7. Metals.....	13	6.1
8. Coal and coke.....	4	.1
9. Oils.....	6	4.1
10. Naval stores.....	3	1.1
11. Building materials.....	8	1.1
12. Chemicals and drugs.....	11	8.7
13. Miscellaneous.....	7	4.6
	<hr/> 106	<hr/> 100.0

modities. This aggregate figure serves as Bradstreet's Index number for the month. A change in price levels is indicated by the variations in the sum total from month to month.

This unique method of computing an index number tends to give importance to the various groups of commodities in about the relation indicated in the right-hand column of the foregoing table. Although quotations are given for 106 commodities, only 96 are used in the final compilation.

HEAVY WEIGHTING GIVEN TO TEXTILES

Bradstreet's Index gives a very heavy weighting to textiles. The prices of cotton and woolen goods fluctuate closely with business conditions and usually precede movements of the general price level, rising early in a period of prosperity and declining early in a period of depression. Since textiles are the predominating commodities, Bradstreet's Index is often used not only as an indicator of general business conditions, but also to forecast changes in the prices of many less sensitive commodities.

The foregoing description of the three oldest and best-known monthly indexes will merely show the various methods of computation and the reasons for divergencies in their fluctuations. Although the fluctuations of all three are usually simultaneous, as shown in Chart 12, the indexes have varying degrees of usefulness in actually forecasting stock market trends.

BEST MONTHLY INDEX OF WHOLESALE PRICE LEVELS

For example, the great variety of commodities included in the U. S. B. L. S. Index Number, as well as its construction, make this index more representative of the wholesale price of all commodities than either of the other

two indexes. The U. S. B. L. S. Index is not published, however, until several weeks after the price change is quite evident from the movements of the other indexes, which are available sooner. Moreover, the large number of manufactured goods included in this index make it less sensitive to changes in general business conditions because of the comparative stability of prices of manufactured commodities as compared with raw materials. In spite of these defects, however, the U. S. B. L. S. Index Number is probably the best general monthly measure of wholesale price levels.

Because of the importance given to foodstuffs in Dun's Index, it does not fluctuate so widely with business conditions as does Bradstreet's, and although it usually fluctuates less violently than Bradstreet's, it is more sensitive than the U. S. B. L. S. Index.

Bradstreet's Index weights raw materials heavily, particularly textiles. Because, as previously noted, the prices of raw materials fluctuate more widely with general business conditions than either manufactured goods or food products, the movements of this index are most typical of fluctuations in general business conditions.

Practically all indexes of wholesale commodity prices, especially the three discussed here, tend to move together. They indicate rising prices when business is prosperous and falling prices when business is poor. This close relationship to business conditions makes them useful as indicators of stock market trends.

BRADSTREET'S, THE MOST SENSITIVE BAROMETER

The price of a single commodity which fluctuates closely with business conditions serves as a more dependable barometer of the stock market than index numbers of prices, simply because the index numbers are more sluggish in their movements. The value of such commodities

as pig iron, bar iron, and coke has already been discussed. Here interest lies in the value of price indexes as stock market barometers; and in choosing the most efficient, it is significant that the one which contains the smallest number of commodities is the most useful. In addition, among the few commodities included, those which have been found to be more sensitive to business movements, such as textiles and raw materials, have been given an especially heavy weighting. In other words, to be valuable as a stock market barometer, an index of commodity prices should include only a few commodities, among which those especially sensitive to business conditions should be most heavily weighted, for then the trend of the whole index number will be dictated by the fluctuations of those commodities given a heavy weighting.

Since Bradstreet's Index complies most exactly with these requirements, it is probably the most useful general index of commodity prices in forecasting stock market movements. The other two indexes are valuable in confirming its fluctuations.

A POPULAR MISCONCEPTION

Naturally enough, the relation between Bradstreet's Index and the trend of the stock market is similar to the relation between individual commodity prices and stock prices. When a twelve-month *moving average* of Bradstreet's prices is taken, a series of figures is obtained from which the minor fluctuations have been eliminated. These figures bear a definite relationship to stock prices.

The *moving averages* of any one of the three indexes discussed in this article are helpful in gauging the trend of the stock market. While the cyclical movements of Bradstreet's are more pronounced, the other two also show cyclical tendencies. Whether these movements are great or small, usually when the *moving average* rises

definitely, stock prices are generally a "sale"; and usually when the *moving average* begins to flatten out after a prolonged rise, and then falls, stock prices are a safe "buy."

The *actual figures* show that rising commodity prices and higher stock prices do not go hand in hand, as popularly believed. In fact, disregarding the broad upward and downward movements in commodity prices caused by inflation or deflation of currency, and speaking in terms of cycle movements, a sharp *rise* in wholesale prices often predicts *lower* stock prices. Likewise, a sharp *decline* in wholesale commodity prices often just precedes a *rise* in stock values.

LIMITATIONS OF WEEKLY DATA

So far in this discussion, only monthly data have been used. The collection of statistics on such a basis has been a comparatively recent development. A few years ago, only such standard series as pig-iron production, money rates, and bank clearings were compiled monthly. The value of statistical series in all phases of business life, however, has become so apparent that there has been a remarkably rapid increase in the amount of monthly data.

One series has led to another. Realizing the limitations of bank clearings, statisticians looked further into banking methods and found bank debits to be more helpful in showing certain phases of business activity. Not satisfied with the more common index numbers showing the general level of wholesale prices, they gathered series which could show special phases of prices: retail prices, food prices, cost of building construction, cost of living, and many others. Thus, in gathering data to show certain phases of the business situation, the statistician has supplied the business man with an increasing amount of data which is valuable in forecasting.

More recently, still further refinements have been made. Instead of compiling statistics only on a monthly basis, the effort is now being made to provide some types of data each week. The value of such data in forecasting stock market trends has yet to be proved, for the weekly series now available are neither long nor varied enough for a fair judgment. Some of this data will undoubtedly prove of value, especially to the trader who is attempting to forecast the short swings of the stock market, after it has been followed through a longer period of time. But since the primary interest here is in the broader swings of the stock market, data issued on a weekly basis are not especially useful. Indeed, there is the possibility that investors in dealing to any great extent with weekly figures might lose sight of the broader movements of the market and become day-to-day traders.

FISHER'S WEEKLY COMMODITY PRICE INDEX

One weekly index, however, deserves mention here. Fisher's Weekly Index of Wholesale Commodity Prices is widely accepted as one of the best indicators of the trend as well as the general level of wholesale commodity prices. Up to the present time the principal value of this index to the investor seems to be in measuring fluctuations in the purchasing power of the dollar.

Professor Irving Fisher of Yale University is one of the foremost authorities on the construction of index numbers. He has been especially interested in the wide fluctuation in the value of the dollar. In seeking a solution for this problem he realized the need for an index of wholesale commodity prices constructed along sound lines and available very shortly after price quotations were made each week.

Professor Fisher computes his index each week from the prices of 200 commodities given in Dun's weekly quota-

tions. The following table compares the weights he gives to different commodities with those given by the United States Bureau of Labor Statistics Index, which, it will be remembered, is the broadest measure of wholesale commodity prices:

	Fisher's Index	U. S. B. L. S. Index
1. Food	18	22.19
2. Farm products.....	28	26.80
3. Cloths and clothing.....	13	9.48
4. Fuel and lighting.....	10	17.37
5. Metals and metal products.....	18	7.61
6. Building materials.....	7	5.28
7. Drugs and chemicals.....	3	1.67
8. Miscellaneous.....	3	9.60
	<hr/> 100	<hr/> 100.00

Fisher's Index gives more weight to farm products, cloths and clothing, metals and metal products, building materials, and drugs and chemicals; it gives less weight to food, fuel and lighting, and miscellaneous items. As a rule, more weight is given to those commodities which are most easily influenced by changing business conditions, and, therefore, Fisher's Index is more sensitive to movements in general business than is the U. S. B. L. S. Index. Fisher's Index is compiled from actual price quotations issued every Friday noon. The index numbers are released to newspapers one and a half business days later. Approximately seventy-five newspapers of the country, which pay two dollars each per month to cover the cost of computation, publish the figures on Monday morning on their business and financial pages.

It is difficult at present to appraise the value of Fisher's Weekly Commodity Price Index as a stock market barometer. It has been in existence only since 1923, and during this period even the older index numbers, Dun's, Bradstreet's, and the U. S. B. L. S. Index, have not shown

the same relationship to stock prices as they did in former years. It is probable that business is going through a period in which the barometric powers of price indexes are suffering from the after-effects of the great price declines of 1920 and 1921. If this is so, Fisher's Index could not be expected to function normally although in the future it will probably have a more definite relationship to stock prices than it has yet shown.

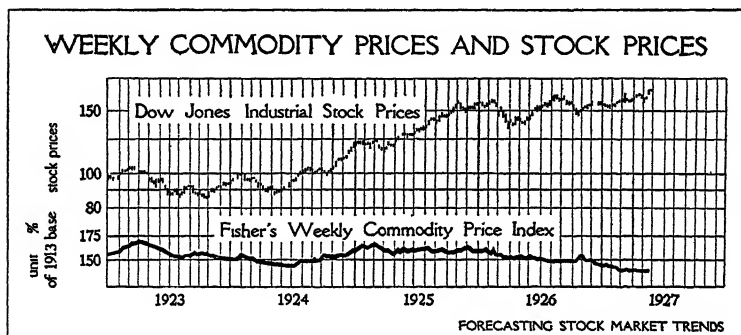


CHART 13

The principal value of this weekly index at the present time seems to be more in its ability to measure variations in the purchasing power of the dollar than in its forecasting merits. Investors whose securities have a fixed rate of return and whose principal is to be repaid in a certain number of dollars will here receive warnings of the fluctuation in the purchasing power of those dollars each week.

CHAPTER VII

Special Price Indexes

THE prices of basic commodities such as iron or steel are often more sensitive to variations in business conditions than the figures obtained by grouping heterogeneous and slower moving commodities together to form an index. However, the forecasting possibilities of commodity prices have not been exhausted until one has investigated the data which have been constructed to show particular phases of the prices. Composite prices of iron and steel products, indexes of the cost of construction, and other combinations have been computed to show variations in prices in particular fields. A number of these indexes are published periodically in trade papers and on the financial pages of daily papers.

COMPOSITE PIG-IRON INDEX

Since the trend of pig-iron prices was found to be very helpful in gauging stock market movements, it is to be expected that an index of the composite prices of a number of different grades of pig iron would also be useful. One of the best known of such indexes is published by "The Iron Age," the trade paper for the iron and steel industry. It includes what is known to the industry as "basic" and "foundry" irons. The basic pig-iron price is quoted in the Philadelphia market; and the foundry pig-iron prices are taken from three important iron centers, Chicago, Philadelphia, and Birmingham. The composite index, consisting of an average of the price per ton of the

most important grades of basic and foundry iron, shows clearly the price fluctuations of pig iron, the principal raw material used in iron and steel making.

This index of pig-iron prices moves closely both in direction and magnitude with that particular kind of pig iron considered in a previous chapter. And just as the

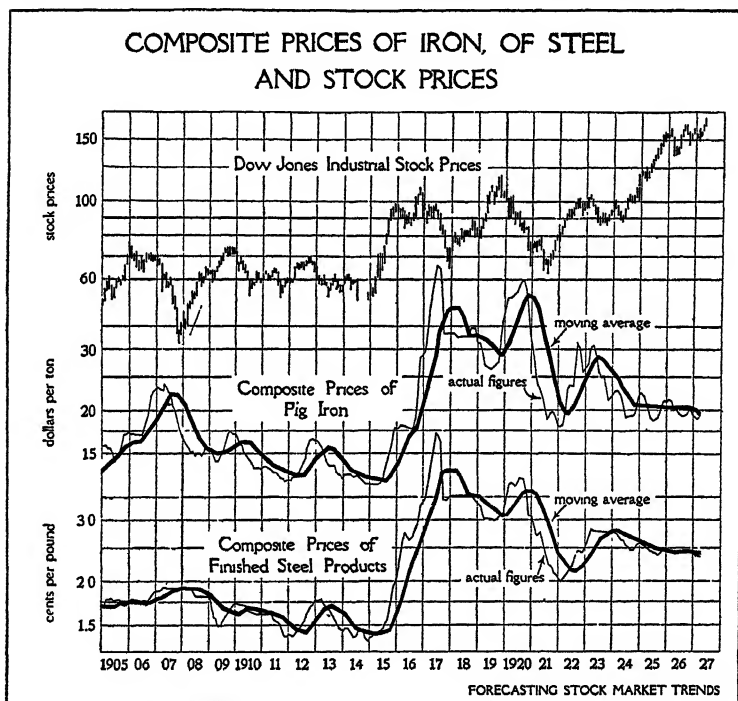


CHART 14

price of the single commodity was definitely related to stock prices, the composite index of prices, which naturally has a similar trend, is also related to stock prices.

INVERSE RELATIONSHIP TO STOCK PRICES

The composite index shows the same inverse relationship to the stock market that has been found to exist in

the case of most wholesale commodity prices. As may be seen from Chart 14, when the index falls sharply the stock market generally rises, and when the index rises sharply the stock market generally falls.

When a twelve-month *moving average* of the composite index is made in order to eliminate seasonal fluctuations and to show *trends* more clearly, the inverse relationship to the stock market is even more pronounced. The *moving average*, indicated by the heavy black line on the chart, shows even a closer inverse relationship between pig-iron and stock prices than did the actual figures.

At this point one might question the value of this data. Of what use is it to know that when the price of pig iron is falling stock prices are rising? It may seem like forecasting something which is already taking place—like announcing that stock prices will rise when they are already quite obviously rising.

IRON PRICES SHOW MORE CONSTANT TRENDS

A more careful consideration proves the value of the composite index. The general trend of the stock market often cannot be discerned until the movement has been completed. At all times there are erratic daily and weekly fluctuations in stock prices, and it is more difficult to determine the trend of the stock market than it is the trend of the steadier commodity prices. The diverse minor stock fluctuations will often confuse the most skilled traders, and the real trend of the market will not be evident until it is too late to make use of the knowledge. The *moving average* of pig-iron prices, however, moves for long periods of time in one direction, and it has been proved that the direction taken by this *moving average* is a safe indication of the general trend of the market, despite the disconcerting cross currents always existing in the stock market.

COMPOSITE PRICES OF FINISHED STEEL PRODUCTS

Still another type of data attempts to show the trend of prices within the steel industry. Several different agencies compile indexes of prices of finished steel products such as steel bars, beams, plates, wire, rails, pipe, and sheets. As in the case of pig iron, one of the best-known composite indexes is that published by "The Iron Age."

This index includes almost 90% of all the finished steel products in the United States. From such a broad representation it would seem that it should give an accurate estimation of the price trend of finished steel products.

Naturally, the composite price of finished steel products fluctuates closely with the composite price of pig iron, since steel is made from pig iron. The finished steel index, however, does not move so widely as does the index of pig-iron prices, which is in accord with the theory stated earlier that commodities farthest from the consumer generally show widest fluctuations in price. For purposes of forecasting, however, the value of both the iron and the steel indexes lies principally in the relation of their price trends to stock market trends, and the width of their fluctuations is unimportant.

STEEL PRICES ALSO FLUCTUATE INVERSELY WITH STOCKS

The relationship of the *moving average* of finished steel prices to the stock market is for all practical purposes identical with that which was found to exist in the case of pig iron. That is to say, when the *moving average* of the composite index of finished steel moves upward, stock prices are generally declining; and when the *moving average* moves downward, stock prices are generally rising. The most favorable time to buy stocks is indicated when the *moving average* turns downward after a prolonged rise; the most favorable time to sell stocks, when the *moving average* turns upward after a long decline.

MEASURING THE COST OF BUILDING

During the past few years, when buildings have been constructed throughout the country at an unprecedented rate, and when each new year brings forecasts of a "building slump," it is natural that the cost of building construction has attracted much attention. It is commonly known that the cost of building is high; but just how high is it?

Of several indexes computed to show the cost of building, two of the best known are those compiled by the Aberthaw Construction Company and by the Engineering News-Record.

A STANDARD FACTORY BUILDING

The Aberthaw Company assumes for an example the construction of a standard building, a seven-story factory built of reinforced concrete. It is to be expected that the cost of constructing such a building will fluctuate as the price of materials and labor rises or falls. So each month they compute the current cost of each item, including labor, which is required in the construction of their standard building. This total cost is expressed in its relation to the total cost of constructing that same building in 1914. The result is the Aberthaw Index of Building Costs for the month.

The index succeeds very creditably in showing the fluctuations in that type of concrete construction which is used widely in the building of factories, offices, and the like. However, it is available on a monthly basis only since 1921, which is really too short a period to judge accurately its value in forecasting.

THE COST OF ALL TYPES OF BUILDINGS

The Engineering News-Record Index of Construction Costs does not represent the varying cost of constructing any particular type of building. It is rather an index

of the aggregate price of steel, cement, lumber, and wages of common laborers. The prices of all these items are combined to form one figure, each item carrying a weight which is roughly proportional to the size of that item's contribution to the business of building throughout the country. That is to say, the items are weighted according to the country's total production of steel, cement, and lumber and the supply of labor. The figure thus obtained is in comparison to the corresponding figure of 1913. The index of the Engineering News Record is shown in Chart 15.

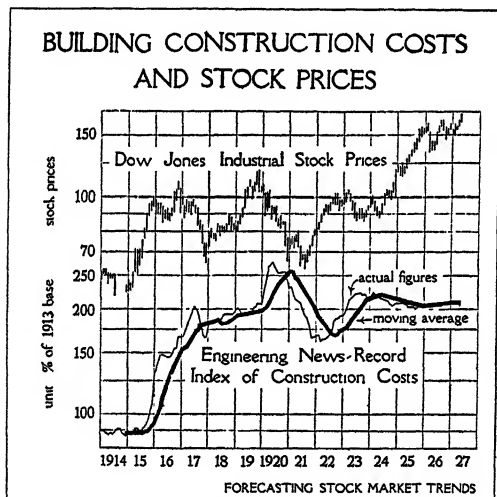


CHART 15

There are other indexes of the cost of building besides the two discussed here. The Fuller Construction Company compiles an index of hotel construction costs; The American Appraisal Company an index of the cost of three different types of buildings—frame, brick with wood frame, and brick with steel frame; and the Department of Commerce, Bureau of Standards, Division of Buildings and Housing, and the Bureau of the Census, compile

indexes of the relative cost of building a frame house and a brick house. A discussion of all available indexes seems unnecessary, since they are so very similar. Only the Engineering News-Record Index has been charted with stock prices in Chart 15.

COST OF BUILDING FOLLOWS GENERAL PRICES

Before comparing the cost of building index with the stock market, it is interesting to consider its relationship to general commodity prices.

The cost of building fluctuates in broad cyclical swings which correspond to the movements of Dun's, Bradstreet's, and the U. S. B. L. S. indexes of wholesale prices. All of these data show definite variations with the ebb and flow of business. It is important to observe, however, that changes in the cost of building usually occur after changes in wholesale commodity prices have been registered.

This seems quite logical. After a long period of business prosperity, the general level of commodity prices begins to rise rapidly. Many business men are led to believe, mistakenly, that this rise in prices will mean permanently higher profits from their products; they forget that their workers' wages and production costs will soon catch up with the higher selling prices; the fact that rising costs will follow rising selling prices is disregarded, and there is a general scramble to build new plants or expand old ones. As prosperity continues, the demand for construction grows and the cost of building begins to rise.

COST OF BUILDING FLUCTUATES WITH IRON AND STEEL PRICES

The cost of building fluctuates very closely with the trend of one of the most important commodities used in making the index: iron and steel. It has already been seen that iron and steel fluctuate in most distinct cycles with the

ebb and flow of business. These commodities, more than any others, influence the index of building costs to move in similar cycles. Since the iron and steel price movements are valuable in judging stock market fluctuations, the movements of the construction cost index might also be expected to serve such a purpose.

One might reasonably expect that in the future, when building conditions are nearer normal, when the twelve-month *moving average* of building costs falls, stock prices will rise; when the *moving average* moves sharply upward, stocks will decline. It should be remembered that this index has not been available for a sufficiently long period to justify its being accepted as an infallible barometer. It would be safer to use the prices of iron or steel alone in forecasting, rather than this index which includes not only those commodities but others which are not equally good barometers.

THE COST OF LIVING

There are two types of data computed from prices which, although not directly valuable in stock market forecasting, are always subjects of universal interest. They deal with fluctuations in the cost of living and variations in wage scales.

It is a common practice to judge the trend or level of the cost of living by using such indexes as Bradstreet's, Dun's, or the U. S. B. L. S. These, however, represent only wholesale commodity prices. Of course, only retail prices can give an authentic picture of the cost of living, for if one desires an accurate measurement of the general level of the cost of living, instead of the approximate level as indicated by wholesale prices, he must deal with the retail prices which he himself must pay for food, clothing, and shelter. During the past few years, several such indexes of retail prices have been conceived.

AVERAGE WORKMAN'S FAMILY BUDGET

In order to reach a better understanding between labor and capital when the cost of living and wages are in dispute, the Bureau of Labor Statistics of the U. S. Department of Labor has undertaken the publication of an index of the cost of living. It is designed to measure changes in the cost of living of the average workman's family.

The expense budgets of many typical families have been examined in order to determine the approximate proportion of total income spent for each item. It was concluded that the normal expenditures of an average workman's family were in the following relation to the total expenditures:

	% of Total Expenditures
Food.....	38.2%
Clothing.....	16.6
Housing.....	13.4
Fuel and light.....	5.3
Furniture and fixtures.....	5.2
Miscellaneous.....	21.3
Total Expenditures.....	100.0%

In order to make the index representative of the entire country, the cost of living in thirty-two different cities is calculated from local price quotations. The indexes for some of the larger cities are published separately to provide a basis of comparison between the cost of living in different cities. Then an average of all of the local indexes is taken to get the cost of living for the country as a whole. The general index of the U. S. B. L. S. is shown on Chart 16. Between 1914 and 1921 the index was published annually or semi-annually, then for a while it was published quarterly, and more recently the Department of Labor has gone back to the semi-annual basis.

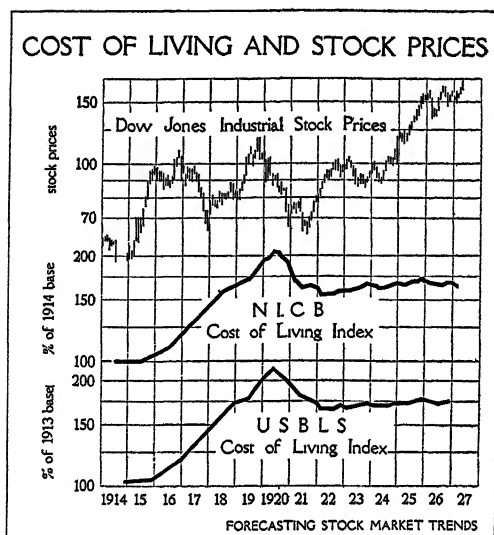


CHART 16

A MONTHLY INDEX OF THE COST OF LIVING

The National Industrial Conference Board, an economic research bureau in New York City, has also attempted to measure the cost of living. Although their index gives slightly more weight to the food and shelter items of expense and less weight to clothing and other items, it tells substantially the same story as the U. S. B. L. S. Index. The following are the weights given to each item:

	% of Total Expenditures
Food.....	43.1%
Shelter.....	17.7
Clothing.....	13.2
Fuel and light.....	5.6
Sundries.....	20.4
	<hr/> 100.0%

This index is not computed separately for different cities, because its only purpose is to give a monthly average

of the cost of living throughout the United States. It is superior to the index published by the Labor Bureau in several respects. It is published monthly as contrasted with quarterly reports by the U. S. B. L. S., and in addition it has been available on a monthly basis since 1920 and on a yearly basis since 1915. Then, too, it is so subdivided that changes in the cost of different groups like food, shelter, or fuel are shown.

To summarize, the index of the cost of living published by the Bureau of Labor Statistics is a reliable quarterly indicator of the cost of living, and shows differences in living costs in various large cities. The index furnished by the National Industrial Conference Board provides a monthly indication of the cost of living and shows changes in the several items separately: food, clothing, shelter, fuel and light, and sundries. It is apparent from Chart 16, that the two indexes agree very closely.

COST OF LIVING STEADIER THAN WHOLESALE PRICES

There is a definite relation between the cost of living and wholesale prices. Of course the cost of living does not fluctuate so widely as wholesale prices, as is shown by the fact that wholesale prices rose from 100 to 240 between 1914 and 1920, while the cost of living only rose to around 205. Since that time, wholesale prices have been on a slightly higher level, although both are fluctuating close to the 160 level. It is important to observe that the cost of living generally follows wholesale prices in their fluctuations.

"AVERAGE WORKMAN" A HYPOTHETICAL CASE

Indexes such as these are useful in settling wage disputes where the question of living costs is under discussion. It should be remembered, however, that they do not necessarily represent the expenditures of every family,

or even of any one family; for the proportion of income spent for food, clothing, shelter, and the rest, varies widely with climate, between people with different sized incomes, and even between people with the same amount of income. For instance, it is natural that a smaller percentage will be expended for clothing and shelter in the southern part of the country than in the northern part, or that as the income increases a comparatively smaller percentage will be spent for clothing and shelter and a greater proportion for luxuries.

The chief value of these indexes lies in their indicating the condition of the "average workman," whatever that may mean. The indexes are not available for a sufficiently long time to judge their value as stock market barometers accurately. It seems from their actions in recent years, however, that there are other far more reliable and sensitive barometers.

WAGES AND COST OF LIVING CLOSELY RELATED

Often there are discussions in daily papers, magazines, and trade journals regarding the general level of wages in the country. Since there is a close connection between wages and the cost of living, it might be well to consider wages while the question of cost of living is under consideration.

Wages are at once a cause and an effect of prices. Naturally, higher wages increase the cost of an article as vitally as do increases in the cost of the raw materials used. But, generally, wage increases follow increases in the cost of raw materials. The changes usually occur in about the following order: raw-material prices rise, followed by a long chain of price increases, until retail prices and the cost of living are affected; then come demands from labor for higher wages to maintain their standards

of living. Thus the "vicious circle" continues to boost prices until a crisis is reached and deflation follows.

DISTINCTION BETWEEN "REAL" AND "MONEY" WAGES

It is essential here to distinguish between real wages and money wages. A *real* wage is the return for labor expressed in terms of purchasing power; that is, wages not expressed in dollars but in terms of articles needed in order to live. A *money* wage is the return for labor expressed in terms of dollars, irrespective of what those dollars will buy.

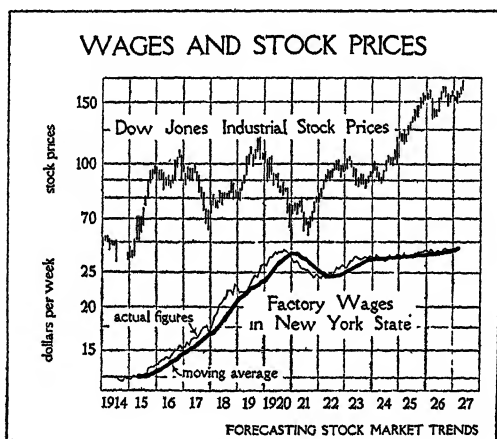


CHART 17

At present, only figures showing money wages are available currently. In order to estimate the trend of real wages it is necessary to consider money wages in terms of their purchasing power. Therefore, a comparison of money wages with the cost of living will give a picture of real wages. This will serve as an indicator of changes in the laborer's purchasing power; in other words, it shows to what extent his standard of living is rising or falling.

Probably the most reliable data showing wage levels is that compiled by the New York State Department of

Labor. In computing the index, the weekly earnings of approximately one-half million employees in over 1600 firms in New York State are averaged. This number includes more than one-third of all factory workers in the State.

The average earnings figure of this large body of factory workers is expressed in its relation to the earnings of approximately the same group of workers for the seven months, June to December, 1914. The index gives a good picture of the average level of wages since 1914.

WAGES MOVE WITH COST OF LIVING

There is a close correlation between factory wages and wholesale commodity prices, although usually there is a lag between the two. It sometimes requires as long as a year for factory wages to overtake wholesale commodity prices.

Factory wages and retail prices, however, move simultaneously. Wage increases usually coincide with increases in the cost of living, although, strange as it may seem, wages sometimes actually rise in advance of the cost of living.

WORKERS CANNOT COMPLAIN ABOUT COST OF LIVING

That factory wages increase just as rapidly or more rapidly than the cost of living is not generally appreciated. Factory workers in New York State have had no cause for complaint about the high cost of living, because while living costs between 1914 and 1920 rose from 100 to 204.5, wages rose from 100 to 228. Later in 1921 and 1922, when the cost of living declined to 154.5, wages declined only to 191. Furthermore, since 1922, wages have increased at a faster rate than the cost of living, until at the present time wages are at a new peak level of 233, as compared with 100 in 1914, while the cost of living now

stands at 167. Because of this situation, factory workers have been able greatly to raise their standard of living in the last few years.

Indexes of wages, like the cost-of-living indexes, have as yet exhibited no distinct cyclical movements and therefore are not especially valuable in stock market forecasting. However, this series measures the rising standards of living among American workmen, a factor which will be indirectly reflected in the value of common stock in business, because it contributes to the general prosperity of the country. For this reason, if for no other, it is interesting to study the index of factory wages.

Four chapters have now been devoted to a study of prices in their relation to stock market trends. To summarize briefly, it has been observed that the prices of certain individual commodities as well as certain groups of prices are dependable and valuable in forecasting market movements. The prices of such raw materials as iron, steel, and coke, which are widely used in basic industries, are reliable barometers of the stock market. A sensitive general wholesale price indicator such as Bradstreet's is also useful. And from the price indexes of certain groups of commodities, like iron and steel, or building materials, fairly definite and accurate conclusions can be reached as to future stock prices. From commodity price data one may obtain valuable assistance in stock market forecasting.

CHAPTER VIII

Crop Production

THE cultivation of crops began over ten thousand years ago when primitive man accidentally discovered that seeds dropped upon fertile ground yielded a worth-while harvest. It was not long before he stopped chasing his food through the forest, and partitioned off the most fertile fields he could find, settled down upon them, and raised his food.

The progress of agricultural means and methods has not been rapid, however. Only in the recent years of scientific investigation has the labor of the farmer been greatly lightened. At the same time, the use of fertilizer has permitted cultivation of a single area for an indefinite length of time. The introduction of crop rotation, scientific discoveries of soil differences and possibilities, and mechanical improvements in implements and materials have exerted a tremendous influence upon agricultural methods. They have minimized the time required to produce the mere necessities of life and have afforded the farmer more and more time for luxuries, amusements, and education.

LARGE NUMBERS RELEASED FROM FARM DUTY

At one time all men were forced to spend all their time producing their own food and clothing; everyone was a "farmer." Even as late as the American Revolution most able-bodied men had to be farmers, with nine out of every ten men farming, as compared with the present ratio of three out of ten. Yet records show that farm products have actually increased in quantity and

improved in quality. This progress has been accomplished by scientific methods.

With less than one-third of our total population engaged directly in agriculture, it is now possible for large numbers to live in cities, where they may participate in the production of such goods as automobiles and countless other time-saving devices. These products make possible a higher standard of living. The development of the era of invention, when millions of men were no longer required for duty on the farm, marks the point at which men could choose between farming and factory labor. It is an important one to study.

BUSINESS CYCLES ARE INDUSTRIAL PHENOMENA

From the time that men left the farms and small workshops in large numbers to enter factories, business has experienced recurrent periods of prosperity and depression. The rapid development of the industrial system has paralleled the appearance of the "business cycle."

The recurrent business cycle is a strictly industrial phenomenon. There had been periods of good and bad business before inventions brought about the Industrial Revolution, but those sporadic movements were the results of other causes than are believed to be affecting the present rhythmical business cycle. The stock market, too, was formerly affected by such an occasional influence as the issuance of worthless paper money, which would cause turbulent bull and bear markets. But such an influence as well as other extraordinary factors, like rumors of war, the abdication of a sovereign, famines, or plagues, were special causes, resulting in unnatural movements in stock prices. It has only been since the factory system became an established part of the life of the people that business has exhibited regular periods of prosperity and depression.

CERTAIN CROPS CLOSELY RELATED TO INDUSTRY

This indicates that agricultural conditions will not be of especial value in forecasting the stock market except in those particular products of agriculture which are dependent upon industrial conditions. For example, since the demand for such commodities as cotton, wool, pork, and hides is greater in times of industrial prosperity than in times of depression, the *prices* of those commodities will naturally be influenced by general industrial conditions. It was to be expected, therefore, that in an earlier chapter the prices of those commodities would prove to be significantly related to stock prices.

The explanation for the affiliation between the prices of certain agricultural commodities and the stock market may be found in the theory that when the supply of a commodity coming into the market is fairly steady year in and year out, but the demand for that article is great at some times and small at others, the result will be that the price fluctuates widely with the demand. Furthermore, when it happens that the demand for the commodity synchronizes with business conditions, the price of that commodity will bear a definite relation to business activity and to stock prices.

CROP PRODUCTION INDEPENDENT OF BUSINESS
CONDITIONS

But while changes in demand for certain agricultural products sometimes cause fluctuations in prices which correspond with changes in industrial conditions, it is significant that the *production* of even these commodities is not closely related to industrial conditions. The supply of all agricultural products is largely controlled by the vagaries of climatic changes such as rainfall, temperature, or wind. Therefore, while the trend of *prices* of some agricultural commodities may give occasional indications

of the future trend of business and stock prices, the *productive* phase of the situation does not offer such useful information.

The production of agricultural commodities is not simple. A farmer cannot vary his crop with the changing demands of his consumers. He must plan his crops months before they are to be consumed, attempting to gauge the future demand while keeping in mind the necessity of crop rotation to maintain the fertility of his soil. In addition, the time in which a farmer may produce is limited by the unchangeable seasons of the year. Few business men must use the foresight required of the farmer. The Department of Agriculture of the federal and state governments as well as the agricultural schools throughout the country try to help the farmer with these problems.

DEVELOPMENT OF GOVERNMENT CROP REPORTING

The federal government, through the Bureau of Crop Estimates of the Department of Agriculture, has been particularly helpful. The first government crop-reporting service was begun in 1862, when unpaid crop correspondents were appointed upon recommendation of members of commercial and agricultural societies to furnish periodic reports on the condition of crops, average yield, acreage, and production in their respective localities. In 1882 the government appointed a number of paid agents to duplicate and thus check the work of the unpaid agents. The paid agents had a corps of assistant field agents. Their reports, sent directly to the Department of Agriculture, were compiled from independent observations and from reports from selected farmers, millers, grain-elevator operators, and transportation companies. About 1900, traveling field agents were appointed and later specialists in various kinds of crops were added to the Department.

In 1915 the local agents were abolished and the work of the whole department was centralized into one unit to provide the farmer with the best possible crop-forecasting service.

CROP REPORTING AT PRESENT TIME

Data showing the acreage and condition of crops and the expected yield are published at frequent intervals during growing seasons for thirty-two different crops by the Department. These impartial reports are the result of co-operation among the farmers to learn the truth about agricultural crop conditions throughout the country. They may be relied upon because the statistics are based upon the unbiased views of farmers and government field agents in all parts of the country. The farmer may draw his own conclusions from them in estimating probable supply and demand. He need not depend upon rumors which might easily be false propaganda designed to raise or lower market prices.

Agricultural conditions are most difficult to forecast. Prices are determined by conditions not only in one country but throughout the world. In no other field are there so many small-scale producers from whom it is difficult to get accurate statistics. Agricultural production is dependent upon a fortuitous element almost without parallel in other lines. The government crop reports are therefore extremely valuable to the farmer not only because they furnish reliable data, but because they help to stabilize the whole price structure of agricultural commodities.

"INTENTION SURVEYS"

The government has recently been publishing "intention surveys," data which estimate the acreage upon which farmers in all sections of the country are intending to plant each particular crop during the coming season. These

surveys try to provide a basis upon which farmers can change their crop-growing plans before it is too late, in case it appears that there will be an oversupply of one crop, or an undersupply of another. Undoubtedly, such information will have an important stabilizing influence upon the prices of agricultural products in the future.

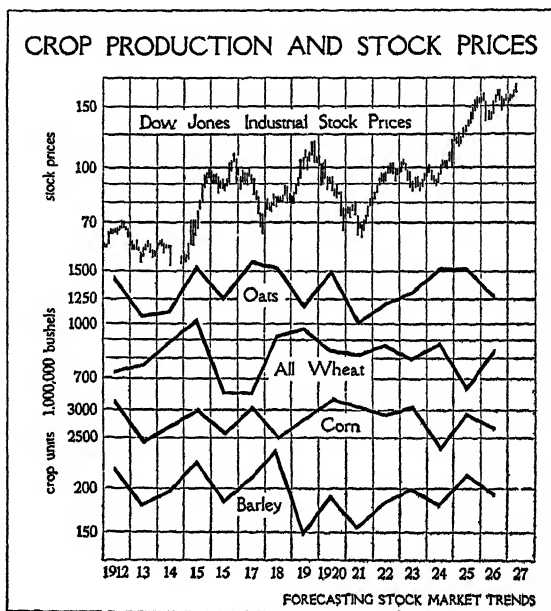


CHART 18

UNSYMPATHETIC CROP PRODUCTION

A comparison of the sizes of the different crops and stock prices is shown on Chart 18. Plainly there is a lack of relationship between them, and consequently there is little stock-price forecasting value in crop data. The explanation of this has already been suggested: whereas industrial production for the most part can be controlled at will, crop production is a relatively long process and cannot be regulated so easily. Crop production cannot

reflect, therefore, the trend of business as it changes from month to month.

AGRICULTURAL CONDITIONS AFFECT CERTAIN COMPANIES

While agricultural production is not of value from the standpoint of judging general business conditions, there are certain companies which cater to farmers almost exclusively and are naturally concerned not only with crop conditions in various parts of the country but also with sectional groups of farmers interested in a single crop. For instance, mail-order houses which sell to all classes of farmers are interested in general agricultural conditions, while the manufacturer of threshing machines is interested principally in conditions among grain growers. Crop reports are of value to such companies, for it is possible to learn from them something of general agricultural conditions, as well as which particular sections of the country are prosperous and which are not.

Since prosperity for certain types of companies depends upon agricultural conditions, it is obvious that common stock in those companies is valuable in the degree that agricultural conditions are analyzed correctly. But since it was shown in Chapter I that almost all stocks move with general business conditions, some to a greater degree and some to a lesser degree, discussions of individual stocks are not to be taken up here. Only the factors which affect general stock market trends will be discussed.

The fluctuations in agricultural production are obviously due to the weather or other conditions which do not affect business so vitally. During the years when weather or growing conditions are universally poor, one would naturally presume that the decreased purchasing power of farmers, who form a large part of the purchasing public, would necessarily lead to a lowering of general business prosperity. But the facts, at least in so far as

the United States is concerned, do not fit the theory. Naturally, countries which raise only one or two agricultural products are seriously affected industrially if those crops fail, and one needs only to point to the industrial as well as agricultural depression in Cuba after the twenty-five-cent sugar spree of 1920 has subsided. But conditions in the United States are very different. Here the agricultural interests are so diverse that the very same conditions which are disastrous to one crop will often yield an unusually fine crop of another product, and general business conditions will not be effected.

CROP CONDITIONS VARY THROUGHOUT THE COUNTRY

In the United States, too, one commodity is seldom poor throughout all sections of the country. A poor wheat crop in Red River Valley may be offset by a good wheat crop in the Columbia basin. Or even within the Mississippi Valley, because of its vast proportions, during a single season there may be produced both good and poor crops of wheat. Naturally, a poor crop anywhere will tend to lower the total supply. But very often the amount of the deficiency is made up either from domestic or foreign sources, and the price of the commodity does not rise unduly.

To each farmer individually, one year's crop failure will naturally make a great difference. But, on the other hand, the farmer who raises a good crop of wheat will profit at the expense of the one whose crop is poor and farmers as a whole will receive about the same total return for their crops.

VARIATIONS IN DIFFERENT CROPS

The annual volumes of production of four of the principal crops are shown together in Chart 18. The chart shows how erratic the production figures are and also that the size of some crops varies more than others.

The size of the corn crop varies less from year to year than any of the others. This "king of forage crops" has a greater aggregate value than any of the others. About four-fifths of the corn produced is consumed on the farm largely as food for hogs; the other one-fifth finds its way into general trade. About three-fourths of the crop is raised in the valley of the upper Mississippi.

The amount of oats produced from one year to the next varies more widely than corn. The principal use for oats is as a horse feed, although about 3% is used in the diets of people, largely as oatmeal. Most of the oats are grown in the corn belt.

The production of wheat fluctuates more widely than either corn or oats. It is grown mostly on the central plains and in the Columbia basin. Wheat, since it constitutes the chief ingredient of two necessary foods, bread and cereal, experiences little change in demand. Therefore, even though most wheat finds its way into industry, it is so decidedly a necessity that the demand does not fluctuate closely with business conditions. And of course the supply of wheat is subject to the same natural hazards as are other agricultural commodities.

The size of the barley crop fluctuates more widely than any of the other three. It is grown chiefly in California, Minnesota, and the Dakotas. It is used mainly as stock food and in the making of beer.

The production figures for these four crops show no relation between the size of the crops and stock prices.

COTTON PRODUCTION LARGELY CONFINED TO ONE SECTION

It is of interest here to examine the production figures of cotton separately, since there are more detailed statistics showing production and consumption of this commodity than for most other agricultural products.

It may be seen from Chart 19 that the United States

cotton crop fluctuates more widely than any other major crop. These wide variations are explained by the fact that cotton growing is almost entirely confined in this country to the southern states, which produce about one-half the world's supply. Cotton differs from most other crops in that conditions affecting one crop of cotton will almost necessarily affect all crops, since production is

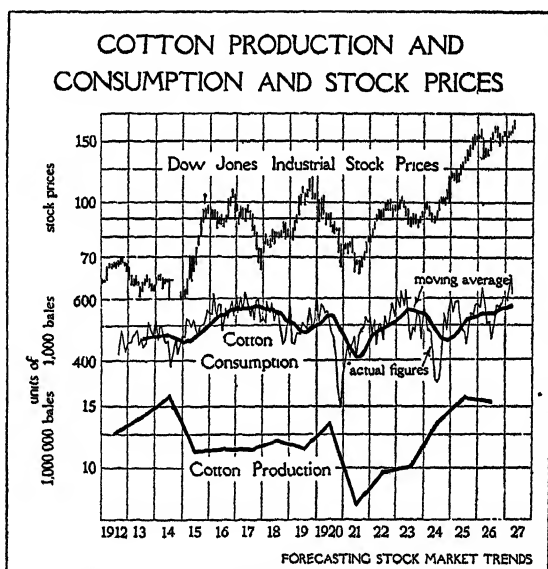


CHART 19

concentrated in a section which is a geographic entity. The boll weevil sweeps through the whole area within a short time. Weather conditions, too, are liable to be the same throughout the entire territory. Other crops are not usually so restricted to one region.

COTTON DEMAND FLUCTUATES WITH INDUSTRY

Unlike most other agricultural products, the demand for cotton is greatly affected by industrial conditions. Al-

though variations in the size of the crop do not materially affect the demand, prosperous business conditions greatly increase the demand for cotton goods. Naturally this is reflected in a greater demand for raw cotton. Since cotton can be stored when there is no need to use it immediately, manufacturers gauge their production from consumer demand rather than from the size of the cotton crop. Thus the figures showing cotton consumption in Chart 19 move in cycles which correspond broadly to variations in general business conditions.

These data reflect manufacturers' rather than final consumers' demand for cotton, since it shows cotton-manufacturing activity. The number of 475 to 515-pound bales of cotton consumed by cotton mills in the United States represents the amount used in spinning cotton which must undergo many more manufacturing processes before it reaches the final consumer. The so-called "cotton consumption" in Chart 19, therefore, exhibits in its wide fluctuations the same characteristics as most data showing the demand for raw materials rather than consumer demand, as the title might lead one to believe.

Cotton manufacturing has long been a sensitive barometer of general industrial conditions. Moreover, movements in cotton manufacturing activity are usually in advance of the average industry. These *actual* figures also have a fairly definite relationship to the stock market, usually moving *with* the market.

The actual figures of cotton consumption are subject to sharp month-to-month fluctuations. A twelve-month *moving average* changes much more steadily, but because it moves later than the actual figures, the trend of the stock market has usually already been reversed by the time the *moving average* changes direction.

RELATION BETWEEN PRODUCTION AND PRICES

There are a number of unusual factors which have entered into these studies of conditions within the cotton industry. A previous discussion of the price of cotton sheetings and of print cloths proved that at times the general level of the prices of those commodities showed very different trends from general commodity prices. For instance, in 1912, 1913, and 1914 the prices of cotton goods were at relatively lower levels than were general commodity prices. Now, with the additional information afforded by the cotton-production figures shown in this chapter, it is obvious that there was an unusually large amount of cotton produced during those years, a condition which naturally resulted in low prices. Another peculiarity of cotton prices was that during 1917, 1918, and 1919 the prices of cotton goods rose more than those of most other commodities. Again the explanation is offered by the production figures: cotton production was low during that period. Since 1921, the fairly large volume of cotton produced has had a very decided effect in lowering cotton-goods prices.

For stock forecasting purposes, however, the *level* of cotton-goods prices is not so important as the *trend*. Fluctuations in demand for cotton goods are dependent more upon current conditions in industry, so that they have a more important influence upon the immediate *trend* of prices than do variations in the size of yearly crops. For the same reason, cotton-consumption figures serve as a barometer of the stock market in spite of erratic changes in the size of crops. Consumers are not forced to use the cotton as soon as it is harvested. It may be stored until a more urgent need is felt for it. In the respect that it may be stored indefinitely, cotton resembles industrial rather than agricultural products and reflects

industrial conditions to a much greater extent than do most agricultural products.

SUMMARY

It appears, then, that the production of agricultural crops bears almost no relationship to stock prices, but is dependent upon fortuitous factors which are quite independent of general industrial conditions. While cotton production varies more widely than any of the other big crops, the fact that it is strictly an industrial raw material and is capable of being stored until needed, makes cotton prices—and especially cotton-goods prices—as well as raw-cotton consumption, fluctuate in cycles which bear resemblances to general business and the stock market. On the whole, however, there seems to be little agricultural data of direct value in forecasting the trend of the stock market.

CHAPTER IX

Mineral Production

THE production of agricultural commodities differs fundamentally from the production of minerals, in that farm crops are the products of the earth, whereas minerals are a part of the earth. A farmer is able to raise crops year after year from his farm if he will only see that fertilization replaces the proper elements in his soil. Once an area is mined, however, thousands of years are required to replace the minerals, and the miner usually finds that his land is valueless.

This basic difference between mineral and agricultural production accounts in a measure for the difference in the volume produced. Professor Edmund E. Day has estimated that between the twenty years from 1899 to 1919 the physical volume of production of mineral and agricultural products increased as follows:

	<u>1899</u>	<u>1919</u>
Mining.....	100	228.0
Agriculture.....	100	137.6
Population.....	100	139.7

The figures show that while agricultural production barely kept pace with the growth of population, the production of minerals increased much more rapidly. At the end of twenty years, the volume of agricultural production had increased 37.6% and population had increased 39.7%, whereas the volume of minerals produced had increased 128%. In order not to magnify the importance of this rapid increase in mineral production beyond its true economic significance, it should be noted that the aggregate value of farm products is four or five times as

large as mineral products. In other words, when the volume of both farm and mineral production increases proportionately, the *value* of farm products increases over four times as fast as the *value* of mineral products.

MINERAL PRODUCTION MORE EASILY REGULATED

These differences may be explained by the fact that mining can be regulated more closely in accord with the demand, while agricultural production is dependent upon weather conditions. In addition, the process of cultivation cannot be curtailed or increased at will so easily as mining. An increase in agricultural production would usually mean an expansion of acreage, and, since there is little cultivable area in the country which is not now being used, expansion must go forward very slowly. On the other hand, new mineral sources are being discovered constantly.

During the early stages of the war, the production of mineral products received a powerful impetus. Prices of minerals used in the manufacture of munitions rose six months before the prices of most other commodities were affected, and mounted to higher levels than any other group of prices. In 1917 they were over three times the pre-war level. The result of such high prices was that mining facilities were expanded to a degree entirely out of proportion to the needs of a nation in normal times, so that after the war there were sharp reactions in the price and production of minerals.

MINERALS INFLUENCED BY INDUSTRIAL CONDITIONS

Certain basic influences which had been operating for at least thirty years were sufficiently powerful to cause recurrent periods of high and low mineral production without the stimulus of war, however. The production of minerals is influenced by industrial conditions, and there-

fore fluctuates in accord with the changes in general business conditions.

The *prices* of certain basic commodities, it has been observed, are more sensitive to business conditions than a general index which groups the *prices* of many different commodities together. Similarly, the *production* figures of those commodities which are most widely used in industry and are more sensitive to industrial conditions are more useful than general *production* indexes which are composed of a number of different minerals.

MINERALS DIFFER RADICALLY

Minerals are used for widely varying purposes. The building-material group, including limestone, sand, clay, and rock, follows the course of building construction. The ferrous metals, including zinc and coke, are closely allied to the iron and steel industry. Coal and petroleum, as well as the precious metals, gold and silver, have peculiarities in production which cause fluctuations dissimilar to those of any of the other minerals. A few metals like iron and steel move very closely with general business conditions.

All minerals will not be discussed in detail, for some are obviously not helpful. For example, the production of the precious metals, silver, and especially gold, fluctuate not so much with business conditions as with new discoveries and the cost of mining. A few other metals cannot be used because satisfactory data pertaining to them are not available. Among these are tin, zinc, lead, sand, rock, limestone, and clay. It may be observed, however, that most of these are so widely used in building that they would naturally fluctuate with the volume of construction. This will be discussed later.

As yet, the production data of many minerals which might be of value in stock market forecasting are avail-

able for only limited periods. And even during these periods they have usually been subjected to the abnormal influences of the war, so that they have not been given a fair chance to prove their worth. However, the data are so widely disseminated throughout financial circles that it is interesting to form an estimate of their value in relation to other well-known barometers.

COPPER IMPORTANT INDUSTRIALLY

Copper, when used in its natural state, or in alloy with other metals in the manufacture of bronze and brass, is of great industrial importance. The automobile manufacturers, ship-builders, electrical industries, and railroads use immense quantities. The United States, particularly Arizona, Montana, Utah, and Michigan, produces about one-half of the world's output.

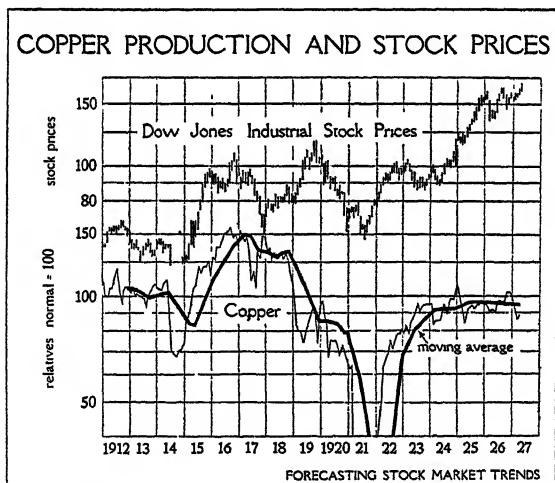


CHART 20

The war created a demand for copper which raised the production and price of the metal to unprecedented levels. But after the war, in spite of the sharp decrease in both

demand and price, the manufacturers refused to slacken up production except for a brief period in 1921 and early 1922. For months they continued to produce more copper than was necessary under normal peace conditions. More recently, however, production has been curtailed sufficiently so that the oversupply is being gradually worked off. When that is accomplished, copper production may again react to industrial conditions as it probably did before the war.

It is evident from Chart 20 that copper cannot at present be evaluated very highly as a stock market barometer, because the available data have been subjected to such abnormal influences.

CAPRICIOUS OIL PRODUCTION

Crude petroleum is a liquid mixture of hydro-carbons which varies widely in composition and appearance. It is obtained chiefly from Texas, Oklahoma, Kansas, and California. It is used extensively as a lubricant and a fuel. The principal product is gasoline. Although, by refining, several hundred different commodities are produced which are used variously in industry, the arts, and the home, it is the demand for the one product, gasoline, which is the chief magnet affecting the rate of crude petroleum consumption.

The production of crude oil is less sensitive than that of any other mineral to the changes in business conditions. At times, as in 1921 and 1922, production seemed to be keeping pace with the general activity of industry, but more frequently, as during the months from early 1920 to the middle of 1924, it shows no relationship to general business trends.

From Chart 21 it may be seen that oil production increases regularly for years at a time, as from 1919 to 1924, with only short seasonal interruptions. But it is

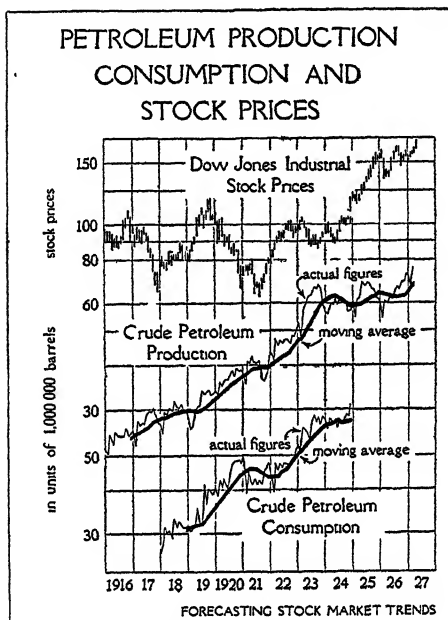


CHART 21

also true that it will show sudden changes in rate of increase as it did after 1923. Oil production is not influenced by business conditions, but depends upon new discoveries of oil wells.

Whatever value oil production statistics may have in forecasting the future trend of oil securities, it is certain that they are valueless in forecasting general trends of the stock market. Chiefly because the oil industry is an important factor in modern business, oil production statistics are widely circulated. In using them, however, it should be remembered that they are useless as barometers of general conditions.

OIL CONSUMPTION MOVES IN CYCLES

From the limited data available it appears that demand for crude petroleum fluctuates more closely with business

conditions than does production. Chart 21 shows a tendency for consumption to move in cycles. During the last few months of 1920 a peak in consumption was reached, followed by a period of decreasing demand during 1921 and 1922. Consumption again increased rapidly during 1923, and in early 1924 showed a tendency to slacken.

During the past few years it has not been possible to use figures of crude-oil consumption in comparison with previous data, because in 1925 the figures for oil consumption in California, one of the component parts of the old series, were calculated on a new basis and could no longer be included. Because the figures since this change are not comparable with the previous figures, they are not shown on the chart.

While it is unsafe to form definite conclusions from such limited data showing the consumption of crude oil, it is undoubtedly true that changing business conditions affect oil consumption more vitally than they do production.

SOME FACTS CONCERNING PETROLEUM

It is interesting to examine the oil industry a little more closely from the standpoint of production and consumption. In the sixty years during which this industry has been developing in the United States, the volume of production has, like most other businesses, been subject to variations from one year to another.

In the case of crude oil, however, these variations are not so great as in most other businesses. In fact, the volume of production of almost all other minerals, as well as most farm products and manufactured articles, shows wider fluctuations *from one year to another* than does the volume of crude oil produced. Instead of showing wide *cyclical* variations from year to year, Chart 21

shows that in the case of petroleum it is the long-time trend which is most striking.

It has been estimated by Joseph E. Pogue that from 1907 to 1919 the rate of increase in crude-oil production was 7.1% yearly. In 1919 the trend changed to an even steeper gradient, increasing about 16.6% each year during the period from 1919 to 1923. Since 1923, however, the rate of increase in crude-oil production has been much slower.

In attempting to explain these radical changes in the volume of oil produced, Mr. Pogue states that during the war the demand so exceeded the supply that the stocks of crude oil were drawn upon freely. This, he holds, led to the popular belief that petroleum resources of the country were limited and that there was danger of our becoming dependent upon foreign sources of supply. The result was a spectacular rise in oil prices, which attracted large amounts of investors' capital into the industry. During the years from 1916 to 1918 the new oil and gas companies formed involved an average of \$600,000,000. Then during the year 1919 the new oil and gas incorporations involved almost \$3,750,000,000, an increase of 525% in the volume of companies incorporated since 1916. This additional capital invested in the industry stimulated improvement in technique of oil-finding as well as advancement in geology, improvements in oil-well machinery, and better organization of the industry generally, so that the yearly increase of 7.1% grew to a yearly increase of 16.6%. This rapid rise in rate of production of petroleum, during and immediately preceding 1923, lowered crude-oil prices to such an extent that production has lately been considerably curtailed.

Although the trend of oil production often changes radically, these changes are not caused by variations

in general business conditions, but are the result of fortuitous discoveries of new wells, or improvements in oil-producing technique.

ANTHRACITE COAL FOR HOUSEHOLD USE

Coal is one of the most important minerals produced in the country. Not only is it universally used for household purposes, but it is an extremely important raw material in manufacturing. It is essential to differentiate, however, between anthracite and bituminous coal.

Anthracite, the so-called "hard" coal, contains 85% to 95% carbon as compared with the 70% to 85% carbon content in bituminous, or "soft" coal. Anthracite is produced principally in Pennsylvania. It is more desirable as a fuel because of its superior heat-producing qualities and because it burns with less smoke and is much cleaner to handle. The high price, however, has limited its use almost entirely to those householders to whom cost is relatively less important than the advantages of a cleaner fuel. Since the demand for anthracite is restricted largely to house-heating purposes, and since this type of demand does not fluctuate with periods of business prosperity and depression, the production of anthracite coal does not reflect to any great extent business and industrial conditions.

The steady demand is reflected in the steady production figures shown in Chart 22. Although the total volume of production varies considerably from one month to another, largely because of seasonal factors and the numerous strikes typical of the entire coal industry, it is evident from the figures that the volume of anthracite produced moves in a very gradual upward direction. Production is clearly not affected by business trends.

The use of a moving average in the chart of coal production shows one of the chief weaknesses of that statis-

tical device. The frequent strikes cause a decided decline in coal production, which necessarily affects the moving average. Since it cannot smooth out such abnormal influences, the trend of a moving average at such times is misleading. On the whole, however, it cannot be condemned for this failure, since in most cases it has been found to be very useful.

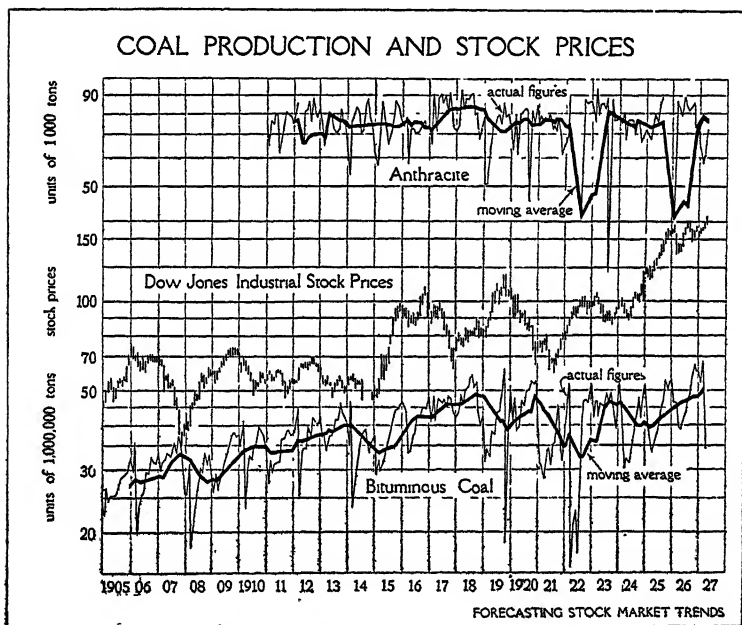


CHART 22

"THE FUEL OF INDUSTRY"

While anthracite is considered better for home-heating purposes, about half the household demand is for bituminous coal. If this were the only use to which bituminous coal were put, its production would show only the gradual upward trend which was observed in anthracite production. Bituminous coal, however, is the "fuel of industry."

Almost three-quarters of all bituminous coal produced is used by railroads and in industry; 25% of this total is used in making iron and steel, while the rest is used variously in generating steam, making coke, gas, tar, and other commercial products.

Bituminous coal is mined principally in Pennsylvania, West Virginia, Illinois, and Ohio. The industry has been overdeveloped to the extent that the capacity of mines is far in excess of demand. More bituminous coal can be produced than business can consume. Since coal may be stored indefinitely, the price is not controlled so much by changes in demand as by traffic congestion or strikes. Such events have been frequent in the history of the bituminous industry and have often caused the price to rise sharply. Ordinarily, however, the price is not affected greatly by changing demand or supply as business goes from dull to active periods. Usually the only result, because the supply is so great, is to bring more mines into production.

FREQUENT COAL STRIKES

While the price of bituminous coal is not affected by changing demand, the volume of production is. When demand increases, production increases to meet it; when demand slackens, there is less coal produced. Chart 22 shows the cycles of bituminous coal production. There is a distinct seasonal lull during the early part of the year followed by increasing activity until well into the fall months. There are also sharp irregular declines in production which are obviously not caused by recessions in business activity. Strikes were the cause of these declines in the spring of 1906, 1910, 1912, 1919, and 1922.

Strikes are such a characteristic feature of the coal-mining industry that they must always be taken into consideration, especially when using production figures.

Generally the miners and coal operators agree upon a wage scale to run for two years. They are often not able to agree upon a renewal scale, and a strike results. Strikes make production figures more difficult to understand and less useful. In spite of this influence, however, variations due to business conditions are sufficient; so that the figures are not without value.

In addition to the seasonal fluctuations which were just noted, there is a tendency for the bituminous production curve to move in cycles. A twelve-month *moving average*, by eliminating the seasonal factor, makes this tendency more apparent, although the influence of strikes on the *moving average* is obvious. Strikes cause halts in production, resulting in occasional sharp declines in the *moving average*, which tend to obscure the true trend.

PREDICTION VALUE OF BITUMINOUS COAL

After allowance has been made for this factor, the *moving average* seems to have a fairly definite relationship to the trend of stock prices. At the point when the *moving average* begins to decline after a prolonged rise and *when stock prices have been declining*, stocks are generally at a low level. It seems advisable to watch stock prices as well as coal production trends in order to be certain that the moving average is not moving falsely under the influence of strikes.

A prolonged period of declining stock prices usually sets in some months after the *moving average* of bituminous coal turns upward. The lapse of time between the two events varies, so that it is usually from seven to twelve months before the stock market reaches its peak and begins to decline. This barometer seems unable to forecast, with any degree of accuracy, downward movements of stock prices. Its chief value is probably in indicating favorable periods to buy stocks.

CEMENT WIDELY USED

Cement is often classified with the minerals. It plays a most important part in road making and in the construction of certain types of buildings, especially office buildings and factories. The many minerals such as limestones, shells, marl, cement rock, clay, and shale, of which it is comprised, must be pulverized and combined in various ways before the cement is ready for use.

The production of cement tends to follow the volume of building construction. The construction of homes, office buildings, and factories varies widely with periods of industrial prosperity and depression. Cement production would prove a more valuable indicator of the trend of business conditions were it not for the fact that road building, an industry little affected by industrial conditions, also requires a large amount of cement. The volume of cement production therefore does not reflect general business conditions so accurately as could be expected if building construction were the sole source of demand.

Statistics showing the volume of cement production have been available for approximately fifteen years. During that time abnormal conditions have affected production radically. In 1917 and 1918 the participation of the United States in the war caused a general decline in both building construction and road building. Construction work was avoided as far as possible, resulting in a lessening demand for cement. The moving average of cement production on Chart 23 shows the sharp decline during the war years. Since the war there is indicated a greatly increased production except for the temporary dullness during 1920 and 1921, when general business conditions were at a low ebb. The greatly increased production in recent years has been caused by the building boom.

Although during the period for which cement produc-

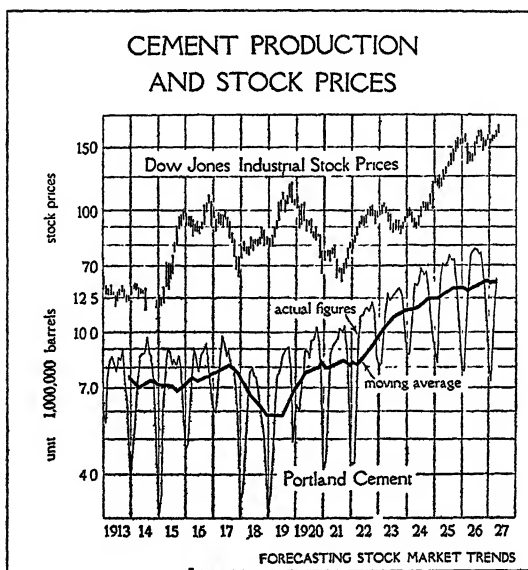


CHART 23

tion figures are available they have seemed to bear no relationship to stock prices, it must be remembered that these years have been decidedly abnormal. Cement production is closely allied to the volume of building construction, which in turn is related to stock prices. It is reasonable to suppose, therefore, that these figures will prove valuable in forecasting stock market trends once the abnormal demand for building construction has been satisfied and construction again more nearly reflects the ebb and flow of general business rather than a period of war curtailment or a building boom.

SUMMARY

It has been observed in this introductory discussion of mineral production that copper and cement production have been subject to abnormal influences during the period for which data are available, but that in the future they

will probably reflect general business conditions more accurately. The production of crude petroleum seems to bear no relation to general business conditions, although petroleum consumption reacts slightly to periods of business prosperity and depression. Anthracite coal production does not fluctuate widely because it is principally used in the household. Bituminous coal, "the fuel of industry," is useful in selecting buying periods for stocks, although less useful in determining the proper selling point. Of these minerals, this bituminous coal production data seem at present to be the most useful in forecasting stock market trends.

CHAPTER X

Iron and Steel Production

ABOUT 4000 B.C., Egyptians, wandering over the peninsula of Sinai which extends down into the Red Sea, accidentally discovered by building fires over copper-ore deposits that tiny beads of pure copper could be separated from the ore. They soon found many uses for the metal other than for ornaments. Blades cast of copper replaced flint knives. The process of making bronze from copper was discovered. Copper tools were a vital factor in the remarkable architectural accomplishments of the Egyptians. The "Age of Bronze" lasted from about 3000 B.C. to 1000 B.C., the fall of the Egyptian Empire.

The cause of the empire's decline is significant. The Egyptians were defeated by the Hittites in Syria because the Hittites possessed iron weapons which proved superior to the Egyptians' copper ones. The Hittites had learned to work the iron mines along the shores of the Black Sea, and soon distributed the metal along the Mediterranean. Iron began to replace bronze as the most important commercial metal. The "Iron Age" began about 1000 B.C. Since then, for almost three thousand years, no other metal has approached the commercial importance of iron. From its early use in the manufacture of weapons, its uses have grown until it is now recognized as a factor without which the present development of civilization would have been impossible.

So important has iron become in modern industry that attempts have been made to attribute the cause of the alternating periods of business prosperity and depression

directly to iron. It has been pointed out that business depressions are most severe in those countries which are the greatest producers of iron; namely, Great Britain, France, United States, Germany, and Belgium. The adherents of this theory claim that the intensity of the business cycle in a country is in direct proportion to the country's importance as an iron producer. They find additional support for their theory in the fact that Russia, Austria, and Sweden—fairly important iron-producing countries—experience mild business cycles, but Spain and Italy, which produce very little iron, rarely experience the violent changes in business conditions apparent in the countries which produce large amounts of iron.

IRON PRODUCTION REFLECTS BUSINESS CONDITIONS

It must be admitted from the above roll-call that nations seem to be important industrially in the degree that they produce iron. However, the most generally accepted theories today lay stress upon the fact that business depressions are most pronounced where all industrial activity, rather than merely iron and steel, is greatest. The countries of greatest industrial importance will naturally produce the largest amounts of steel, since it is so vital to modern industry. But the business cycle is now considered to be the result of great industrial activity, which in turn requires large amounts of iron and steel.

Economists today believe that while iron and steel do not cause business cycles, they are so extensively used in basic industries that fluctuations in their production necessarily reflect fluctuations in general business conditions. These variations in production are believed to be the effect rather than the cause of business cycles. Iron and steel are used more widely in basic industries than any other commodity, and hence there is no commodity which fluctuates so closely with general industrial activity.

IRON AND STEEL INDUSTRY OUTRANKS OTHERS

The table shown on this page, which ranks each of the thirteen major manufacturing industries of the country according to their relative importance, gives an idea of the importance of the iron and steel industry in relation to other industries. It is clear that a single industry may not be most important in all respects. For example, the iron and steel industry is first in amount of wages paid, but second in the value of its products. In judging the importance of the various industries, this table takes into consideration the value added in manufacture, value of products, cost of materials, wages paid, number of wage earners, and amount of capital employed. Only the last column, giving the number of establishments, is not used in giving to each industry a general ranking as shown in the first column. This information, although interesting, is not indicative of the true importance of the industry, for it makes little difference whether there are many small establishments or a few large ones.

Group Ranking	Industry	Value Added in Mfg.	Value of Products	Cost of Mats.	Wages	No. of Wage Earners	Capital	No. of Estab.
1.	Iron, Steel and Products	1	2	3	1	2	1	6
2.	Textiles and Products	2	3	2	2	1	2	4
3.	Food and Kindred Products	3	1	1	5	4	4	1
4.	Lumber and Remanufactures	5	6	8	3	3	5	2
5.	Chemicals and Allied Products	4	4	4	8	8	3	8
6.	Vehicles for Land Transportation	7	5	5	6	7	6	5
7.	Paper and Printing	6	7	9	7	6	7	3
8.	Metals and Metal Products	9	8	6	9	10	8	9
9.	Railroad Repair Shops	10	10	10	4	5	12	13
10.	Leather and Products	8	9	7	10	9	9	11
11.	Stone, Glass and Clay Products	11	11	12	11	11	10	7
12.	Tobacco Manufactures	12	12	11	12	12	13	10
13.	Liquors and Beverages	13	13	13	13	13	11	12
	Miscellaneous Industries rank between groups	2-3	3-4	4-5	1-2	2-3	3-4	4-5

The iron and steel industry ranks first in general importance. More value is added to the product in the

process of manufacture than in any other industry, it pays the largest amount of wages, and has the largest amount of capital invested. It stands second in importance in the value of its products, and in the number of wage earners. It is third in the cost of materials used.

INDUSTRY DEPENDENT ON ONE RAW MATERIAL

Such industries as the textile or food products industries are almost as important industrially as the iron and steel industry. In some respects they are even more important. And yet the statistics showing the activities in these industries will not serve as such good general barometers, for the entire iron and steel industry, unlike most others, is dependent upon a single raw material. The manufacture of bar iron for forging, galvanized sheets, tin plates, wire, nails, pipes, or any of the products of the industry is dependent upon the production of the one commodity, pig iron. This situation is in sharp contrast to the manufacture of textiles, which requires a great variety of cotton, wool, and silk, or to the food products industry, which uses hundreds of different raw materials. Variations in the supply of any one of the raw materials used in those industries do not necessarily affect the entire industry.

The technological factors of iron and steel production, the tremendous size of the industry, its wide usage in all fields of industrial activity, as well as the fact that pig iron, the all-important raw material, is produced in relatively few plants, so that it is easily kept account of, make pig-iron statistics one of the most useful barometers.

MANY GOOD BAROMETERS

The prices of pig iron and bar iron, as well as the price of coke, one of the most important raw materials used in iron and steel manufacturing, have already been dis-

cussed as stock market barometers. Price series of each of these three commodities were used to forecast, and each afforded a very accurate basis upon which to judge the future trend of the market. Since the three were so closely related, a combination of them produced an unusually useful stock market barometer.

The use of the prices of iron and steel in stock market forecasting is probably not so common as is the use of figures showing the volume of production. The accuracy with which Colonel Ayres's 60% blast-furnace barometer has predicted the wide swings of the stock market has for some time focussed attention on the value of the production figures. There are other iron and steel production data besides blast-furnace statistics, which are useful in judging the trend of the market.

It has been observed that the *moving average* of pig-iron prices moves consistently in an opposite direction from stock prices and therefore furnishes an excellent barometer of stock trends. The production of pig iron, as published by "The Iron Age," bears a close relationship to pig-iron prices, although the fluctuations do not exactly correspond, for pig-iron prices generally rise *after* pig-iron production has increased and fall shortly *before* the volume of production declines. The *moving averages* of pig-iron prices and pig-iron production decline almost concurrently, but the *moving average* of prices often rises after the *moving average* of production has increased. Because of these variations there is naturally a different relationship between production and stock prices than was observed between pig-iron prices and stock prices.

USE OF PIG IRON IN STOCK TRADING

Pig-iron production figures shown in Chart 24 seem to foretell periods of rising stock prices more precisely than they do periods of falling prices. For instance, during

the past twenty-two years it would have been advantageous to buy stocks whenever the *actual figures* of

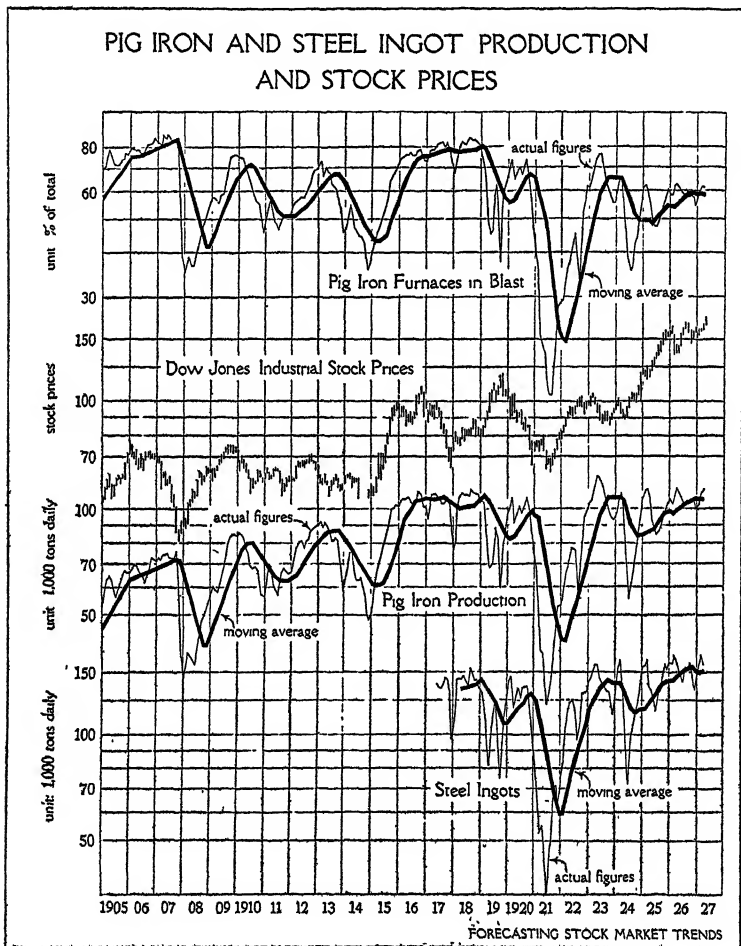


CHART 24

pig-iron production, after having reached a peak, declined 20%. Almost invariably stocks were at bottom prices at those times. It is also important to notice that by the

time the *actual figures* had declined 20%, the *moving average* of pig-iron production had also begun to decline. In other words, the signal to buy stocks seems to occur either when the *actual* production figures decline 20% or at the point when the *moving average* begins to decline.

Although, according to the method outlined above, this barometer correctly forecasted rising stock prices during 1918, it must be admitted that the buy indication given at this time was due to traffic congestions and the ensuing coal shortage rather than because of a severe decline in general industrial activity. As an offset to this piece of luck, however, it should be noted that the downward jog in the figures caused by the steel and coal strikes, in the fall of 1919, was the result of another unusual factor. This time, however, the result was less fortunate. From these two instances it is obvious that many abnormal factors must be reckoned with in dealing with figures showing the volume of any kind of production.

The moving average seems to give more definite "sell" indications than the actual figures do, although even these sell signals are not very definite. The *moving average* generally begins to rise a number of months before stock prices have reached their peak. The length of time between an upward turn in the *moving average* and the point when stock prices are at their peak varies considerably. As a rule, however, it would have been advantageous to sell about twelve months after the *moving average* turned upward.

To summarize the usefulness of pig-iron production in forecasting: When the *actual figures* of pig-iron production show a 20% decline from a high point, or when the *moving average* of those figures begins to decline, stocks are generally low. Twelve months after the *moving average* turns upward after a prolonged decline, stocks are generally high.

THE FURNACES-IN-BLAST THEORY

These are not the only data relating to iron and steel production which are useful in forecasting. "The Iron Trade Review" publishes another type of data which indicate the volume of pig iron being produced. This shows the percentage of total pig-iron furnaces in blast in the United States at the end of each month. The series is self-correcting for secular trend, that is, since the data express the ratio between the total number of furnaces in blast to the total number in existence at the particular time, the percentage of furnaces in blast would be the same if there were 100 furnaces with 60 in blast or if there were 200 furnaces with 120 in blast. Regardless of the growth of the industry from a total of 100 to 200 furnaces, the "pig-iron furnaces in blast" would in either case show 60%. Thus the factor of growth, or trend, is taken care of automatically.

Colonel Leonard P. Ayres, in evaluating these data as a barometer, has observed that the average rate of blast-furnace operation over a number of years had been about 60% of the total number in existence. Accepting this percentage as the normal rate of production, he observed that when the figures crossed the 60% mark on the way up, the stock market was usually high, and when they crossed the 60% mark going down, the market was generally low. This barometer, used according to Colonel Ayres's theory, has been an accurate gauge of stock-market conditions.

PRODUCTION OF STEEL INGOTS

There are two other basic commodities whose production figures are similar to pig-iron production and therefore are able to serve as stock market barometers.

After being variously treated, according to the use to which it is to be put, a certain percentage of pig iron is

shaped into steel ingots, and a part of it is made into iron bars or wrought iron. The portion made into steel ingots serves as the raw material for the steel fabricating industry just as pig iron serves as the one raw material for both the iron and steel industries. Although steel scrap is sometimes remade into steel products, steel ingots are the principal source of supply.

The following table shows the percentage of the entire production of steel used in each industry during 1925:

Railroads.....	25%
Building construction.....	17½
Automobile.....	13
Oil, gas, water, and mining.....	8
Exports.....	5
Food containers.....	4½
Machinery.....	3½
Agriculture.....	3½
All others.....	20
Total.....	100%

Railroads, building construction and automobiles consume by far the largest part of the steel produced in the country. The table evidences the great variety of basic industries in which steel is used.

The monthly production of steel ingots has been recorded by the American Iron and Steel Institute since 1917. These production figures reflect activity in the industry with exceptional accuracy. They also show such a close parallelism with pig-iron production that the two series are equally valuable in forecasting.

The *actual figures* of steel-ingot production fluctuate very closely with movements of pig-iron production figures. Steel-ingot production usually does not rise to higher levels or fall to lower levels than pig-iron production, but it usually changes at a faster rate.

The *moving average* also follows the trend of the pig-iron production average. The peaks and troughs occur

simultaneously, and the percentages of rise or fall are almost exactly the same. The only noticeable difference between the two occurred in 1925 and 1926, when steel-ingot production increased at a slightly faster rate. From this close agreement it is assumed that steel-ingot data will constitute as reliable a barometer as pig-iron data, if used in the same manner. Because steel-ingot production increases and decreases at a faster rate, it is better to allow a decline in the *actual* figures of 25% rather than the 20% allowed in the case of pig iron as a buying point for stocks. A decline in the *moving average* would signify a good time to buy. The selling signal is no clearer here than it was in the case of pig iron, but it seems to be safe to follow the rule of approximating the peak twelve months after the *moving average* turns upward.

COKE AND PIG-IRON FIGURES ALMOST IDENTICAL

Coke is of course used extensively in the manufacture of iron and steel, as well as in many other manufacturing processes. There is a remarkably close relationship between the production of coke and pig iron. Coke production figures have been available since 1912 and have moved almost simultaneously with pig-iron production trends. When charted together it is almost impossible to distinguish one from the other.

Throughout the period during which it has been possible to compare the two series of data, there have been many unusual influences, such as the car shortage and resulting traffic tie-up in the winter of 1917-18, and the strikes in 1919 and 1922. Even the fact that there was a radical change in the technical process of coke manufacturing did not upset the close correlation between them. In 1912 about 2,500,000 tons of bee-hive coke and 1,000,000 tons of by-product coke was a normal monthly production. A decade later the situation was reversed: the

production of bee-hive coke was more nearly 1,000,000 tons a month, whereas the monthly production of by-product coke had increased to almost 3,000,000 tons. But in spite of car shortages, strikes, and changes in method of coke production, the close agreement between coke and pig-iron production was not altered.

Naturally, since the figures are almost identical, coke production shown in Chart 25 is equally as valuable as

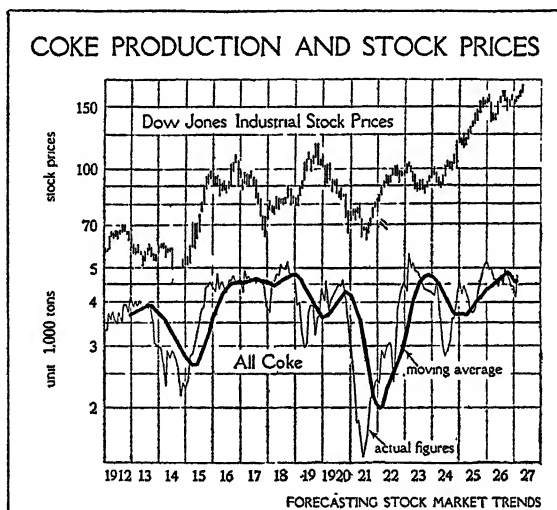


CHART 25

pig-iron production, and may be followed in much the same way in forecasting. A decline in the *actual figures* of coke production of 20% from a high point or a downward turn of the *moving average* may be taken as a signal to buy stocks. The most advantageous selling point is again more difficult to determine than the buying point, but under normal conditions it would have been wise to have sold stocks twelve months after the *moving average* turned upward.

UNFILLED STEEL ORDERS

The United States Steel Corporation's unfilled steel orders, showing the number of unfilled orders held by the Steel Corporation on the last day of each month, were published from June, 1902, to June, 1910, on a quarterly basis. Since then the corporation has issued the data monthly.

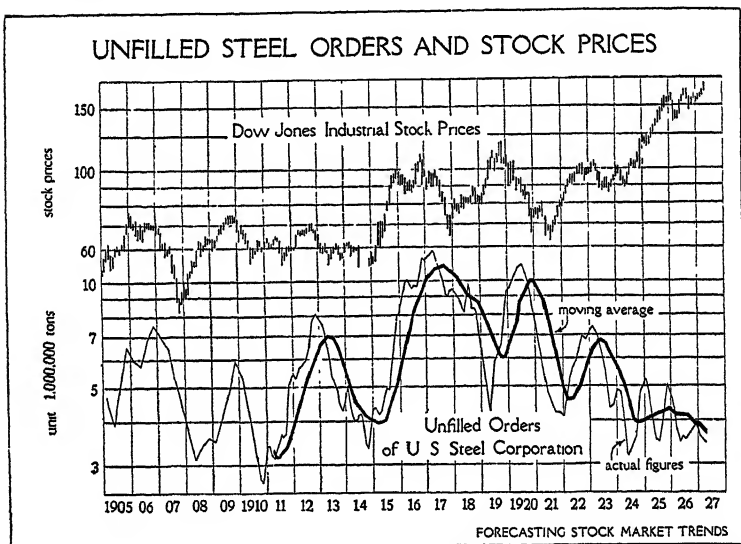


CHART 26

Since the corporation produces over 40% of the total steel products in the country, unfilled orders should furnish an excellent basis upon which to estimate the country's production of pig iron in the near future. The number of unfilled orders do, in fact, have a magnetic effect upon pig-iron production, usually anticipating increases and decreases in production by a month or two.

Statistics of unfilled orders of the Steel Corporation are not able to foretell stock trends so well as pig-iron production statistics. Sometimes the size of unfilled

orders increases or decreases more rapidly than pig-iron production, and at other times at about the same pace. During the past few years there has been a decline in the volume of unfilled orders, while pig-iron production has been maintained at a high rate. The fact that the volume of unfilled orders is slightly more irregular in its relationship to stock prices makes it a less reliable barometer.

In this chapter five series of data from the iron and steel industry have been considered in their relation to the stock market. It has been observed that they all move in unison. The trends of the production of pig iron, coke, and steel ingots move with the number of furnaces in blast and the number of unfilled orders for steel. All but the last are about equally useful in selecting the most advantageous time to buy or sell stocks. Whether the steel industry is considered either from the standpoint of price or production data, it affords the most useful stock market barometers of any single industry.

CHAPTER XI

Indexes of Business Activity

CERTAIN basic commodities like pig iron, steel ingots, or coke, it has just been seen, are so sensitive to changing business conditions that their rates of production may be used advantageously as barometers of both business conditions and stock prices. These particular commodities are useful because they are typical of business as a whole. The production of many other commodities is also directly affected by business conditions. Presumably, that data will also be valuable in forecasting the trend of stock prices. The discussion will continue in a consideration of special phases of industrial production, such as within the building, leather, food, and lumber industries.

Electricity is often quite properly classified among the minerals, being considered a "fuel" derived from natural sources in the same manner that coal, coke, and oil are. Statistics showing the number of kilowatt hours of electricity produced by public utility plants are useful because they represent both the business and home life of the people.

The United States Geological Survey estimates that about 50% of the electric power produced is consumed in industry, about 30% by electric railways, and 20% in lighting and other home uses. Electric power is used so widely in the home, by street railways, and in wholesale and retail business where demand does not fluctuate widely, that it is not so sensitive to changes in the basic industries as if it were used only for manufacturing purposes. The cyclical variations in the production of electric power are therefore greatly reduced.

Electric-power production possesses some advantages over most other barometers. In the first place, the figures are not affected by storage conditions, since production of electricity is coincident with its consumption. The production and consumption of electric power are one and the same thing. The data also possess the merit of not being affected by strikes, railroad-car shortages, or similar factors, to the same extent that the production of other fuels are, since public utility plants usually store from one to two months' supply of coal in order that strikes, traffic congestion, and the like will not affect operations.

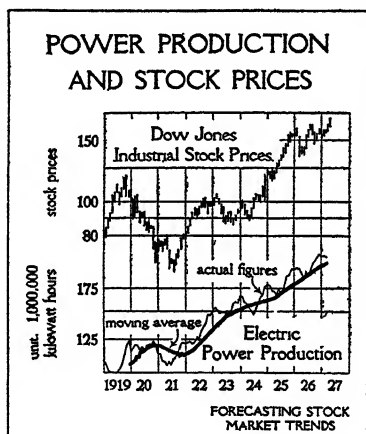


CHART 27

The monthly production of electricity has been recorded since January, 1919, by the United States Geological Survey from figures issued by the "Electrical World." This gives the average daily output of public utility plants in one million kilowatt hours of electric power. Chart 27 shows the distinct seasonal fluctuations in the figures. Electric-power production declines regularly from January until July, and then shows a rapid increase through the fall months to the end of the year.

RAPID INCREASE IN POWER PRODUCTION

From a forecasting point of view, the distinct secular trend apparent in these figures is important. Mr. George Otis Smith, of the United States Geological Survey, estimated in 1923 that the rate of growth of electric-power production has been like a compound interest curve, with an annual increase of between 10% and 11%. An increasing number of private industrial concerns are finding it more economical to let the specialized and better equipped public utility plants supply them with power than to try to produce their own electricity. Since 1923 there has been a 10% increase in the amount of power produced annually.

The rapid rate of growth makes it more difficult to appraise the forecasting value of electric-power production. A distinct cyclical movement in the figures reflected the changes in general business activity during 1918, 1919, and 1920. After those years, electric production continued to increase, although at a slightly slower pace than in previous years. Since 1924 business has become increasingly active, and electric-power production has resumed its sharp ascent. Thus it is seen that since 1921 a depression in general business has not been serious enough to affect electric power production, although a business lull was shown plainly in the more sensitive barometers during 1924. The data may prove of considerable value, however, in measuring business activity after it has been available for a longer period of time.

DIFFICULTIES OF MEASURING BUILDING ACTIVITY

The unprecedented rate of building construction throughout the country since the war has attracted widespread attention. Some statisticians believe that the building boom is greatly exaggerated, because the new type of construction is of a much more conspicuous

nature. Their theory is that the apartment houses, hotels, and huge office buildings which are being built today are so ostentatious that the layman is apt to exaggerate the size of the building boom. The fact is that the boom has persisted for a number of years despite the apprehensions of many.

Before 1910 the chief source of information regarding the volume of building construction was data showing the value of permits issued in the large cities each month. Such information, furnished by reports from building inspectors or commissioners, estimated quite creditably the amount of building throughout the country. There are, however, several drawbacks to the use of building-permits as an indication of the actual amount of construction. For instance, merely because a building permit is issued, it does not necessarily follow that the building will actually be constructed. A sudden change in business conditions or an expected change in civic-building codes or zoning laws will tend to increase the number of building permits. Under such circumstances the increased number of permits is not especially significant. Again, the cost or fee required to obtain a permit is based upon the estimated cost of the proposed building. It is customary in some cities to understate the cost as much as 30% or 40%. Sometimes, too, conditions change between the issuance of the permit and the actual construction, so that it is impossible always to estimate the cost accurately. Permits, therefore, may easily overstate or understate the actual amount of building taking place.

CONTRACTS AWARDED

Since 1910 the volume of building construction has been measured by statistics prepared by the F. W. Dodge Corporation, showing the money values of the contracts

awarded in building. The data include all contracts in small cities, rural districts, and large cities of twenty-seven northeastern states. These states embrace for the western and southern boundaries North and South Dakota, Iowa, Missouri, Tennessee, Virginia, and parts of eastern Kan-

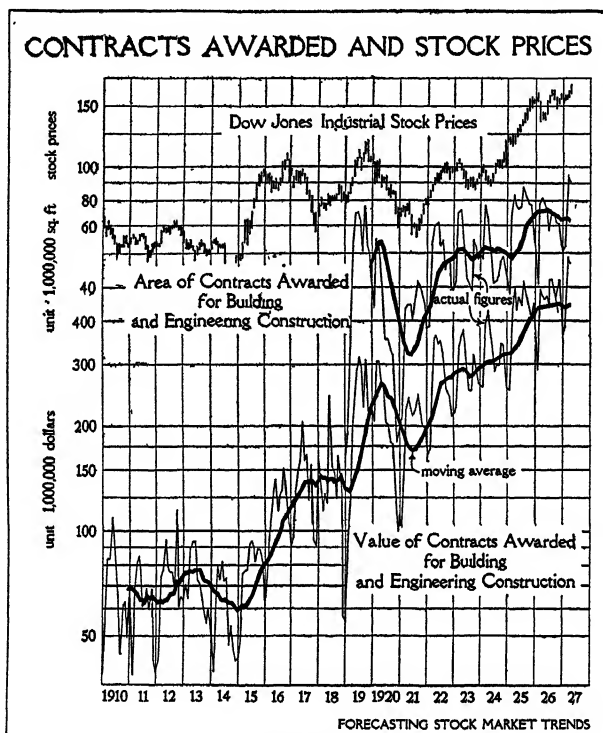


CHART 28

sas and Nebraska. In 1923 the same information from nine southern states was added, so that building-contract values are available now covering an area which includes about seven-eighths of the total population of the United States.

Neither building permits previously considered, nor contracts awarded, make allowances for changes in the

cost of building. So the F. W. Dodge Corporation since 1919 has taken care of this factor by publishing the number of square feet of floor space represented in the contracts awarded. This places the data upon a purely volume basis.

Since building depends upon weather conditions, there are pronounced seasonal fluctuations in building-construction data. Of course, in the southern and Pacific states, where climates are more temperate, the seasonal variations are not so wide as in the northeastern part of the country. Data for the country as a whole, however, show pronounced variations in activity between winter and summer months, so that a moving average must be taken to show the true trend.

EFFECT OF MONEY RATES ON BUILDING

The volume of building construction usually moves a few months in advance of changes in general business conditions. A comparison with pig-iron production will show that pig-iron production, indicative of current business activity, generally moves several months later in upward or downward swings. The obvious conclusion is that building-construction data reflect future plans of business men, and that these plans for new industrial plants are laid before production in existing plants is increased to capacity. And at the other extreme, at the height of a period of prosperity, building operations will be cut down before an actual decrease in production occurs.

This situation, however, does not mean that business men are able to foresee the future so clearly that they change their plans for expansion before the crisis occurs, for it is a well-known fact that building construction is usually curtailed against the average business man's wishes. Various external influences, such as the high

building costs or high rates on borrowed money, are the factors which call a halt to elaborate expansion programs.

When money rates are low, the amount of building increases; when money rates rise, it becomes more difficult and less profitable to borrow and the volume of building declines. As a result, there is a very close inverse relation between building permits or contracts awarded and money rates. This can be proved by comparing bond yields with building-construction data.

That there is a fairly close agreement between the volume of building and stock prices may be seen from Chart 28, showing moving-average figures of the area of contracts awarded. The data showing value of contracts awarded have been affected by too many abnormal factors to be of practical value, although there is a tendency for these figures, also, to move with the stock market.

RELATION BETWEEN PRODUCTION AND PRICES

The tendency for prices of raw materials to fluctuate more violently and over a wider range than either wholesale or retail prices has been discussed in previous chapters. This tendency was attributed to the fact that raw-material producers, being farthest from the consumer, are unable to judge the changes in demand so accurately as the wholesaler or retailer, and they therefore tend to overproduce or underproduce to a greater extent.

It has been evident that the production of raw materials is more erratic than the volume of wholesale or retail business. It is also apparent that the variations in the production of the different classes of commodities—raw materials, producers' goods, consumers' goods—do not occur simultaneously. Neither are the price changes of those different groups coincident. It has been demonstrated by Willford I. King, of the National Bureau of

Economic Research, that the volumes of trade and price changes usually take place in about the following order:

1. Volume of retail trade,
2. Volume of wholesale trade,
3. Volume of factory production,
4. Wholesale prices of raw materials,
5. Wholesale prices of finished products,
6. Retail prices of finished products.

This sequence of movements shows that an increasing demand by retail trade creates a larger volume of wholesale trade, which in turn demands increased factory production. Prices are affected in the reverse order. Prices of raw materials rise first and affect prices of wholesale and retail products in turn, so that the consumer whose buying stimulated all the activity is finally greeted by rising prices of the commodities he uses.

The main purpose of this discussion is to bring out the fact that factory production fluctuates most widely and is last to feel an increase or decrease in demand. Retail trade fluctuates least, because it is able to respond most rapidly to changes in demand. Wholesale trade is the intermedial.

INDEX NUMBERS LESS SENSITIVE

Practically all of the data used in estimating the volume of business activity throughout the country have pertained to a single basic commodity like pig iron, or to a single basic industry such as the building industry. It is now intended to discuss more comprehensive data which purport to estimate manufacturing activity in many different lines of business. Since the figures will deal with manufacturing, wider oscillations are to be expected than if dealing with retail or wholesale trade. However, the movements will not be so pronounced as in data dealing with one basic raw material. Different kinds of businesses do not increase or decrease in activity simulta-

neously or proportionately, any more than do the prices of the various commodities dealt in. Thus, an index figure combining production in many different industries will be more typical of industrial activity in general, but will be less sensitive and less erratic than indexes of certain basic commodities.

INDEXES AGREE ON TRENDS, BUT NOT ON LEVELS

Three of the best-known indexes of the volume of physical production are those published by the Standard Daily Trade Service, the Department of Commerce, and the Federal Reserve Board. All three agree closely when it comes to gauging the *trend* of manufacturing activity. They differ, however, when they attempt to measure the *level* of manufacturing activity during a particular month as compared with the level at some previous date. However, this point does not affect their ability to indicate business trends.

An impression of the types of industries included in these indexes is necessary to any understanding of their significance. Many industries which should be included in such indexes are so secretive about information concerning their business that it is impossible to obtain production data. In addition to this difficulty, it is sometimes impossible to obtain information from certain industries because of the form of organization peculiar to that particular industry. Many other industries do not release information soon enough to be of use in these indexes. And, in addition to these practical problems, the compilers face the technical problems of seasonal variations, measurement of trends, and the treatment of unusual factors such as strikes and car shortages. All of these limitations make it impossible in a production index to represent every industry in proportion to its true importance to business as a whole.

So it is only possible to weight each industry in an index according to its supposed importance. A common basis from which to judge this importance is to compare for each industry the "value added" to the product in the course of manufacturing. In spite of necessary allowances for such factors as the paucity of data in certain fields, or the lag between the data and the time of publication, the following table shows that the various weights correspond in a broad way to the Census of Manufacturers figures in 1919, showing "value added in manufacture" by different industries:

	"Value Added" Census of Mfr. 1919	Stand. Daily Trade	Dept. of Commerce	Federal Reserve Board
1. Iron and steel.....	18.30	25.00	14.43	24.00
2. Textiles.....	15.30	20.00	14.02	22.00
3. Foodstuffs.....	9.30	8.00	11.34	11.50
4. Chemicals.....	7.44	....	6.39	....
5. Lumber.....	6.83	10.00	11.55	11.00
6. Paper.....	6.83	4.00	.41	4.50
7. Automobiles.....	6.23	6.00	....	....
8. Leather.....	3.58	4.00	7.42	5.00
9. Non-ferrous metals..	3.39	*21.00	2.06	*20.00
10. Railroad repair shop.	3.22	....	....	....
11. Stone, clay, and glass	2.70	....	4.12	....
12. Tobacco.....	2.11	2.00	5.36	2.00
13. Liquors and beverages	1.54	....	....	....
Miscellaneous	13.23	....	22.90	....
	100.00	100.00	100.00	100.00

*Including cement, petroleum, and coal production.

The difference between the three indexes in weighting is of little importance here, since it seems to affect their *levels* more than their *trends*. It may be seen from Chart 29 that all the indexes are remarkably uniform in trend. But further than this, although they do not fluctuate so widely, the direction of their movements agrees closely with the trend of production in the basic commodities,

like pig iron or steel billets. This similarity of trend suggests, of course, that the general indexes bear the same relation to stock prices as was observed between stock prices and the production figures in special industries.

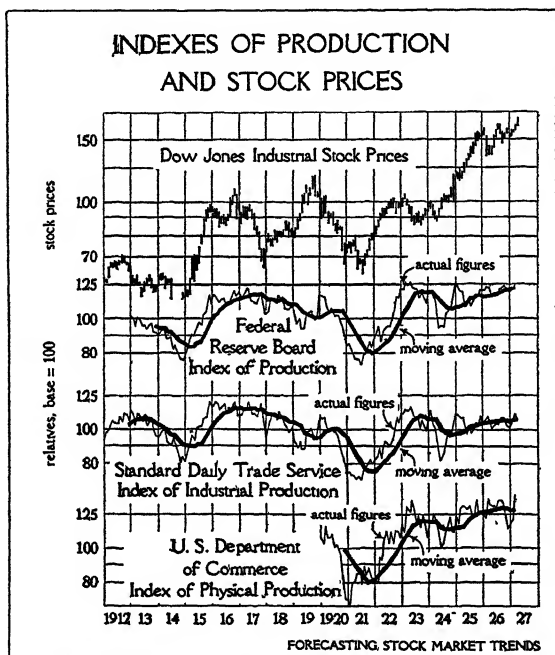


CHART 29

STOCKS AND BUSINESS NOW MOVE ALMOST SIMULTANEOUSLY

It has been demonstrated that stock market changes in recent years have occurred almost simultaneously with movements in the actual production figures of such basic commodities as pig iron. In other words, the stock market does not precede business trends as formerly. Especially has this been apparent since 1921, when all indexes showed an increase in the volume of production

before stock prices actually began to advance. The decline in stock prices, however, preceded the decline in industrial activity by about a month. In 1924 an advance in stock prices somewhat preceded an increase in industrial activity, but nevertheless it is evident that in recent years the movements of the stock market are synchronizing more closely with fluctuations in manufacturing activity. Of course, this is only one branch of business activity. The relation between stock prices and other businesses will be discussed in other chapters.

Indexes combining statistics of many different industries are not so sensitive to changing stock market trends as the volume of production of sensitive commodities individually. In addition to this, indexes have not been available for a sufficiently long period of time to judge their value accurately. But disregarding their value as far as the stock market is concerned, it is interesting to note that the Department of Commerce Index fluctuates most erratically, while the Standard Statistics Index fluctuates least.

AN INDIRECT WAY OF MEASURING PRODUCTION

There is another type of data which, while it does not measure the exact rate of production, succeeds very well in indicating the degree of business activity. The Department of Labor is interested in showing the condition of the working man in all sections of the country; and in order to do this the Department goes to a great deal of expense and trouble to secure data which show in detail such things as the number of employees, the amount of wages, the amount of full-time and part-time employment, changes in wage scales in different industries, and much more information valuable to the study of a specific industry. For purposes here, the most useful part of this data is that pertaining to the number of employees.

Since wages have already been considered in the discussion of "Factory Wages in New York State," the U. S. B. L. S. data, which show the number of people employed, is of most interest. This index, including as it does statistics from all parts of the country, from over fifty different industries and eight thousand establishments, cannot be expected to be sensitive or specific in its movements. It does, however, accurately show general

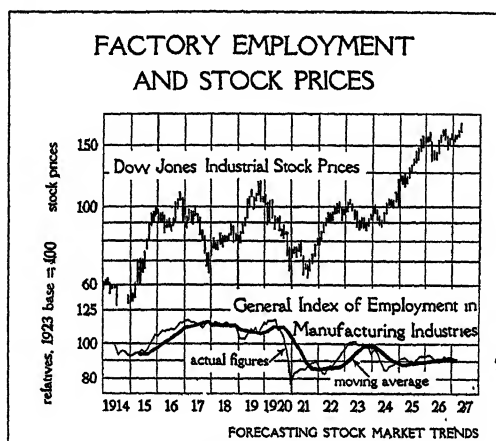


CHART 30

employment conditions throughout the country. The index has been computed on a monthly basis since 1914, with 1923 considered a normal year and rated 100.'

PRODUCTION INCREASES BEFORE EMPLOYMENT

Since an increase or decrease in manufacturing activity should logically influence the amount of employment, the close correspondence between the U. S. B. L. S. Index of Factory Employment and the various indexes of factory production just discussed is to be expected. However, the movements are not simultaneous. An increase in production precedes an increase in employment by a

month or two. Manufacturers evidently do not increase the number of workers until production reaches a point where more workers are absolutely necessary.

When the index of factory employment is compared with the fluctuations of the stock market, it is seen that stock prices generally rise a few months before there is an increase in the number of factory workers. Stock prices usually decline from four to eight months before the number of workers decreases. This index is not valuable as a stock market barometer, because it is too general, and necessarily slow in its movements.

In this chapter, electric-power production, data showing the volume of building construction, indexes of manufacturing activity, and finally an index of factory employment have been discussed. It is impossible to summarize briefly the value of such a heterogeneous group of production data. It can merely be emphasized again that none of them shows the same sensitiveness to changing stock market trends that certain basic commodities do.

CHAPTER XII

Rate of Consumption

THE whims of the consumer are, in the last analysis, the cause of business cycles and stock market cycles.

Goods are not produced unless there is a demand for the finished product. It is in the hope of satisfying this demand at a profitable price that the long series of processes which are necessary to produce the finished commodity are undergone. Raw materials are produced, transported, made into producers' goods, and finally into consumers' goods, only because it is believed that the consumer will buy them.

If consumer demand remained constant, the total amount of manufacturing would also be constant from one year to the next. If consumers would not decide to buy phonographs one year and radios the next, or if they would not buy fewer articles when business was poor than when business was prosperous, production would consist simply of finding sources of supply to meet consumer demand. The various concerns would compete for an unchanging volume of trade. While the success of a particular concern would vary with its advantages over competitors, the total volume of business of all concerns would remain constant, or rather, would show a gradual upward trend with the growth of population.

INADEQUACY OF RETAIL TRADE DATA

In spite of the fact that all forms of production depend upon final consumer demand, it has been surprisingly difficult until recent years to obtain specific data of final consumption. In discussing the activity of retail trade it has been customary to point to the production of a few

articles, or to the volume of retail goods being transported by railroads, or to retail credit conditions, or to other statistics which show only special phases of the situation. As far as actual data showing the size of consumer demand are concerned, it was impossible to deal in anything but broad generalities because statistics were not available.

There are two principal reasons for a dearth of information about the retail trade. First, there are innumerable small retail dealers from whom it would be almost impossible to obtain accurate figures of sales; and second, small dealers often guard their "business secrets" jealously.

The establishment of Federal Reserve Banks has done much to change the situation regarding the desire for secrecy, by assuring the smaller businesses that information regarding individual sales would not be disclosed to competitors. Under guarantee of absolute secrecy, they have been induced by the Reserve Banks to give monthly returns showing the volume of sales and other data necessary to an estimate of general activity in retail trade.

The advent of chain stores has also reduced the difficulties of securing retail trade data. The managements of the various chains—grocery, five and ten cent, drug, cigar, shoe, music, candy, and the like—needed only to be persuaded that a regular report of sales was advantageous to themselves as well as other businesses. As a result, there are now available, through the Federal Reserve Banks, data showing the volume of sales from many kinds of chain stores.

GROWTH OF CHAIN-STORE SALES IMPORTANT

There are several inherent difficulties involved in the use of retail sales statistics. First, there is the marked seasonal trend that is so obvious in retail sales around Christmas time, which in most cases can be easily taken

into account. But, in addition, the long-time trend of sales, that is, the "normal increase" of sales caused by the growth of business, must also be considered. Probably both factors can be corrected accurately enough for most purposes by the use of a moving average.

It is impossible to express the *volume* of retail sales except by quoting the *price*. When raw-material and manufacturing production were being examined in previous chapters, it was possible with such products as pig iron, steel billets, coal, and coke, to express *volumes* in other units than dollars and cents. The lack of standardization of retail goods sold, rapid changes in quality and classes of goods, and the tremendous number of different units involved have made it impossible up to the present time to obtain a satisfactory index of the physical volume of retail business in the United States, except as indicated by the value of goods sold. It is therefore necessary always to keep in mind that price levels exert a powerful influence upon the data showing the *dollar volume* of retail sales.

SALES OF MAIL-ORDER HOUSES

Two of the most familiar series of data pertaining to the retail trade are the sales of the two largest mail-order houses, Sears, Roebuck & Company and Montgomery Ward & Company. The sales of the first approximated \$275,000,000 in 1926, while the sales of the latter amounted to about \$200,000,000. Both concerns have their headquarters in Chicago, and sell their goods principally to farmers in the middle and far-western states. Since their sales are in dollar units, it is necessary to make mental allowance for fluctuations in price levels.

The volume of sales is apt to fluctuate widely because of features peculiar to the mail-order business. For example, the price of each product sold is listed in catalogues about the size of a metropolitan telephone book.

As long as the mail-order house has its requirements for each article covered by contracts with producers, there is no price problem. When prices rise suddenly, however, after the catalogue has been printed and distributed, unless the company has covered its requirements far in advance, it must either lose money or serve notice that all prices are subject to change. A revision of prices tends to increase the advantage of the local general stores, for whom the problem of price revision is much simpler.

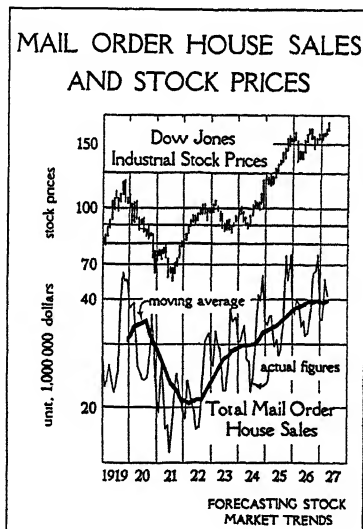


CHART 31

Even though allowances are made for changing price levels, it is evident from Chart 31 that mail-order sales fluctuate widely. The statistics are not available for a long enough time, however, to determine whether these fluctuations are related to industrial conditions and stock trends.

CHAIN-STORE SALES

There are other data attempting to show volume of retail trade which concern themselves more especially with urban trade. Many individual companies are now publishing monthly sales records, following the example of

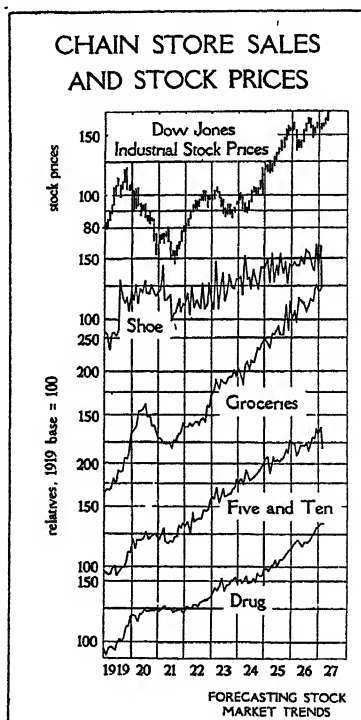


CHART 32

the F. W. Woolworth five and ten cent stores, which were first to report monthly sales regularly. Soon many large five and ten cent chains, as well as tobacco, drug, grocery, and shoe chain stores followed their example, and since 1919 the amount of such data has been especially replete.

The Federal Reserve Board has done much to induce these stores to publish sales records regularly and after a

wide enough representation of the various fields of retail selling was obtained, the Reserve Board combined the data into seven groups as follows:

	Number of chains	Number of stores
Groceries.....	29	18,000
Shoe.....	6	380
Five and ten.....	5	1,900
Drug.....	10	520
Cigar.....	3	2,700
Candy.....	4	120
Music.....	4	60

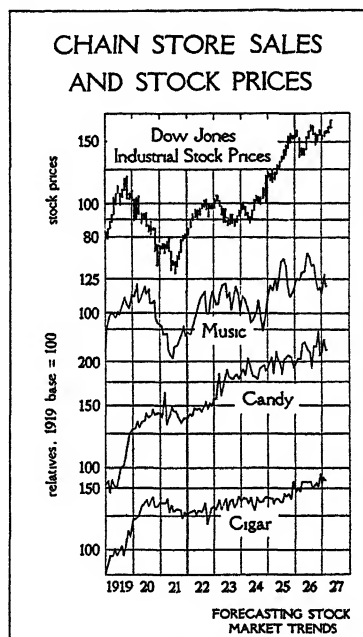


CHART 33

Fluctuations in the sales of these different types of stores are shown in Charts 32 and 33. It is plain that the dollar sales of all chain stores have increased during the past few years. The sales of the grocery groups have increased most, those of the five and ten cent stores next

in succession, followed in the third place by the drug stores. The sales of the candy, shoe, cigar, and music stores increased most during the year 1919, but have since shown only gradual increases.

Mental allowances for the change in prices must be made, since only the *dollar volumes* of sales, and not the actual *physical volumes*, are reported. However, these figures indicate in a broad way activity in many of the most important retail industries.

After allowing for the effects of price changes, very few cyclical fluctuations are apparent in retail data. For although in times of business depression people will buy poorer qualities of goods, they must buy a certain amount of food and clothing in order to exist. As a result, fluctuations in the *physical volume* of retail sales are very moderate.

SALE OF MUSIC FLUCTUATES WITH STOCK MARKET

Music sales fluctuate more widely than the sales of any other retail commodity. When business is good, music sales increase, and in times of industrial depression they decline. There is usually a lag of a month or two between general business conditions and music sales. It is interesting to note that two other classes of commodities, candy and cigars, which might also be expected to fluctuate widely with business conditions because they are luxuries, do not show this same sort of relationship. Of the retail business considered here, music sales are the most helpful, for, since they follow the trend of general business by a month or two, they also follow the trend of stock prices by about that same length of time.

DEPARTMENT STORE SALES FLUCTUATE WITH COST OF LIVING

In addition to the sales of these chain stores, the Federal Reserve Board constructs an index showing the sales of 333 department stores in 117 different cities throughout the country. Since department store sales reflect the demand for all classes of commodities from absolute necessities to the most extravagant luxuries, an index of their sales would not show the fluctuations apparent in the case of a store dealing only in luxuries. Department store

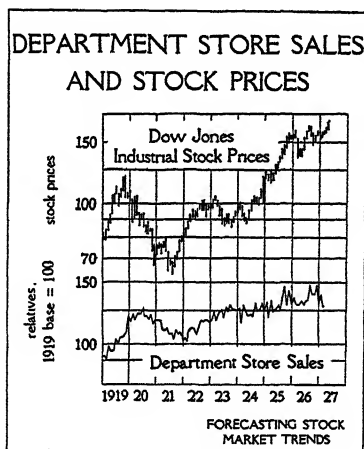


CHART 34

sales reflect only two things noticeably, the growth of the country and the changes in price trend. They fluctuate cyclically with changes in the general level of the cost of living and are no more sensitive to changing business conditions than that index was found to be.

MIDDLEMAN IS THE CONNECTING LINK

The business situation has now been viewed from both the production and consumption standpoint. Agricul-

tural and mineral production, the production of other basic commodities, as well as the production of many different kinds of manufactured goods, have been considered. Finally, the part played by the retail stores was investigated. Thus many of the processes through which an article must pass to reach the final consumer have been observed. And still the discussion has neglected one of the most crucial and puzzling problems: the middleman and his part in the business system.

The middlemen—wholesalers and jobbers—are largely responsible for the distribution of goods. Through their hands, articles pass from raw-material producers to manufacturers, and then again from manufacturers to the retailers. They are the connecting links between the raw-material producers, manufacturers, and consumers.

THE NATURE OF THE MIDDLEMAN'S WORK

The work of the middleman, often misunderstood and condemned as valueless to society, is in reality invaluable to the modern highly specialized business system. It is he who accepts many of the risks necessary to large production. He supplies the producers with facilities for prompt disposal of such commodities as cotton, grain, or wool. As middleman, he is always ready to accept any quantity of raw material. These materials he stores in convenient places so that the manufacturers may draw upon them whenever necessary. By assembling small lots of goods into large lots, the middleman makes possible the large-scale production factories of today.

In the next step, too, from factory to consumer, the middleman serves as the connecting link. In this case he not only finds a market for the producer and facilitates the physical distribution of goods, but assumes the risks of style and price changes as well. In catering to the consumers' demands he studies the consumers' current

needs and is able to advise the manufacturer of desirable changes in the making of his goods. Such service becomes increasingly valuable as the integration of industry continues. In these ways the middleman who assembles, stores, grades, divides into small lots, and assumes risk of price and style changes, has stabilized both production and marketing of goods. He is an indispensable factor in the business system.

The business cycle, it has been observed, has been caused by the growth of large-scale production. It is the outcome of the modern factory system. As long as the article had only to pass from the maker to the one who used it, there were no sharp increases or decreases in the volume of goods being made. There were no business cycles. Production and consumption went hand in hand. Before the factory system developed there had been occasional upheavals in business life, but the business cycle as it is known today became apparent only when labor became specialized,—only when a wide gap in time and distance between the producer and consumer was created.

NO LONGER MOVE SIMULTANEOUSLY

The comparison of charts showing consumption and production rates will show that these two processes no longer move similarly. The chart showing department store sales indicates rather accurately general *consumption*, for the department store, in offering all kinds of commodities from luxuries to necessities, caters to all types of consumers. The chart showing the Federal Reserve Board's Index of Production is similarly representative of general *production* rates, since it includes many different types of production.

Before the Industrial Revolution, if curves similar to these had been constructed, they would have agreed

much more closely in their movements, for production and consumption were almost coincident. Today, however, specialization and large-scale production, while they have raised the standard of living and stimulated progress, have also lengthened the process from producer to consumer and have thus caused the rate of production to move independently of the rate of consumption. It is obvious from these two curves that the production of goods fluctuates much more widely than the consumption.

INVENTORIES FLUCTUATE WIDELY

At times, production is carried on at a much faster pace than consumption; at other times, at a much slower pace. In the first instance, the excess of manufactured goods must be stored, since the current demand cannot consume the great quantities of goods being produced. At the other extreme, when current production is far below current consumption, stocks of goods are getting smaller.

During tremendous price declines, such as those experienced in 1920 and 1921, manufacturers and wholesalers frequently go to the wall because of the great declines in inventory values. Data showing the size of stocks of goods on hand in different fields would be very useful in the study of business conditions, for large inventories would mean a satisfactory—small inventories an unsatisfactory—condition for general business. But until recently there has been no attempt to collect such statistics.

AN INDEX OF COMMODITY STOCKS

The Department of Commerce has recently compiled data showing the size of commodity stocks on hand in various industries. Although its value cannot be estimated accurately at present, it offers possibilities for the future. As yet, figures for only forty-five different commodities have been made available. This number is

divided into four groups by the Department of Commerce: raw foodstuffs, other raw materials, manufactured foodstuffs, and other manufactured commodities.

Each commodity is weighted in importance according to the relative value of the supply of that particular article in 1919. The value of the supply was calculated from the value of the total amount marketed or manufactured. In case sufficient amounts were imported to give any substantial importance to that factor, the value of the amount imported was added. The Department publishes figures showing the size of stocks in each of the four groups separately, and also figures showing inventories in all groups combined. The groups included follow:

INDEX OF COMMODITY STOCKS

		RAW MATERIALS	
Foodstuffs	% of total	% of group	Kind of commodity stocks
Sugar.....	2.58	9.47	Raw cane sugar held by refiners
Wheat.....	10.08	37.06	Visible supply east of Rockies
Corn.....	4.02	14.73	“ “ “ “ “
Oats.....	1.20	4.43	Visible supply at principal markets
Eggs.....	3.78	13.88	Cold-storage holdings
Poultry....	2.24	8.20	“ “ “
Fish.....	.80	2.96	“ “ “
Apples.....	1.03	3.79	“ “ “
Coffee.....	1.49	5.48	Visible Supply
	<u>27.22</u>	<u>100.00</u>	
Non-foodstuffs			
Cotton....	11.52	62.05	Total ginned cotton
Cottonseed..	2.01	10.80	Stocks at mills
Flaxseed...	4.40	2.16	Stocks at Minneapolis and Duluth
Rosin.....	.11	.62	Stocks at Jacksonville, Savannah, and Pensacola
Turpentine..	.06	.31	Stocks at Jacksonville, Savannah, and Pensacola
Crude Petroleum..	4.18	22.52	Stocks in pipe lines and tank farms, Californian and Mexican
			stocks held by importers
Tin.....	.29	1.54	Visible supply in warehouses
	<u>22.57</u>	<u>100.00</u>	

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MANUFACTURED PRODUCTS

Foodstuffs	% of total	% of group	Kind of commodity stocks
Meat.....	9.40	42.93	Total stocks beef products, pork products, lamb, and mutton
Wheat Flour	8.25	37.68	Stocks of flour everywhere
Butter.....	2.98	13.62	Cold-storage holdings
Cheese.....	.80	3.68	" " "
Rice.....	.46	2.09	Stocks of clean rice held by mills and dealers
	<hr/> 21.89	<hr/> 100.00	
Non-foodstuffs			
Refined oils	9.35	28.89	Stocks at refineries, gasoline, kerosene, lubricating oil, gas, fuel oil
Cottonseed oil.....	3.32	10.28	Stocks at mills
Cement....	.97	3.02	Stocks held by manufacturers
Brick.....	1.15	3.55	Total stocks clay fire, silica, and facebricks held by manufacturers
Flooring...	2.86	8.86	Total oak, maple, birch, beech, Michigan softwoods, held by manufacturers
Lumber....	7.97	24.66	Total yellow pine, California white pine, Michigan hardwoods, held by manufacturers
Enamelware	.80	2.48	Baths, lavatories, sinks, and miscellaneous enamelware
Zinc.....	.57	1.78	Stocks of slab zinc held at refineries
Pig iron (merchant)	4.53	14.00	Stocks held by merchant furnaces
Newsprint..	.80	2.48	Stocks in manufacturers' hands
	<hr/> 32.32	<hr/> 100.00	

The weights given to the different commodities are particularly interesting. The first column of figures shows the importance of each commodity in relation to the total of all groups; that is, the weight used in making up the total figures. The second column indicates the importance given to the commodity in making up the figure for each group. The last column gives a brief

description of the type of inventory included for each commodity.

THE MOST SENSITIVE GROUP

For purposes of judging general industrial conditions, only the figures dealing with manufactured non-foodstuffs seem to be especially useful. The first group, raw foodstuffs, with especially heavy weighting for wheat, corn, eggs, and sugar, will vary with the production of those commodities, and it has been previously shown that the sizes of agricultural crops are entirely unrelated to general business conditions. The non-foodstuff group is subject to a similar criticism; for although this group includes the raw materials which go into industry, it gives 85% of the total weighting to the two materials cotton and crude oil. As has been previously shown, the production of neither of these varies with business conditions, so the inventories cannot bear a close relationship to general industrial conditions. The manufactured foodstuffs group must also be discarded in any attempt to gauge general business conditions, because the demand for the commodities included, such as meat, flour, and butter, remains fairly constant in spite of business depressions and revivals, so that the figures move independently of business.

The manufactured non-foodstuffs group, however, includes commodities, most of which move with general business trends. It includes materials used in the building and construction industries—lumber, flooring, brick, and cement—as well as oil, cottonseed, iron, steel, and publishing, all of which show a relatively close relationship to general conditions.

HEALTHY AND UNHEALTHY COMMODITY STOCKS

This index is by no means a complete or wholly satisfactory measure of commodity stocks. It will serve, however, as a basis upon which to present some generalizations regarding the value of inventory data. Theoretically, an increase in commodity stocks indicates that

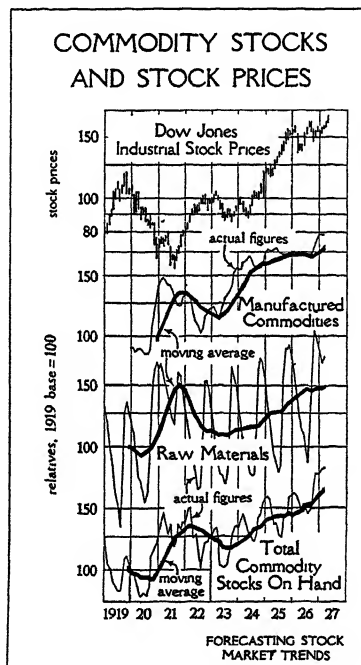


CHART 35

more is being produced than is being consumed. If an increase in inventories occurs just as commodity prices are falling, as happened in late 1920, the situation is especially bad, because then business will suffer heavy losses through depreciation in value of inventories. Besides the possibility of suffering heavy losses when inventories are large, a too-rapid acceleration of production—when more commodities are being produced than are being

consumed—indicates, too, that business will eventually have to slow down to allow time for some of the extra supply to be consumed.

There will be a natural increase in production as the country grows. It is not possible as yet to gauge accurately what this growth factor will be because of the few figures available, but this influence should be taken into consideration when using the index. Chart 35 shows that the most rapid increases in manufactured non-foodstuff inventories occurred in 1920 and 1923. At this time business was depressed, and the stock market was generally declining. Since 1924, commodity stocks have shown no unusual increases, evidently not even increasing along a normal trend line until the last few months of 1926. It seems necessary for commodity stocks to increase considerably more than they have up to the present time before they will indicate a dangerous condition for business and the stock market.

AN INDEX OF UNFILLED ORDERS

The Department of Commerce Index of Unfilled Orders also attempts to show a special phase of the distribution of goods. The index aims to measure the size of the orders not yet filled by raw-material producers and manufacturers. Theoretically such an index should estimate the trend of production in the near future. The following commodities, weighted as shown, make up the index:

Unfilled orders for:	% of Total
Steel.....	65.5%
Locomotives.....	4.6
Merchant pig iron.....	10.3
Maple and oak flooring.....	11.5
Clay fire and face brick.....	8.1
	<hr/> 100.0%

By far the heaviest weighting is given to steel. The figures are taken from the United States Steel Corporation, and are identical with the index of unfilled orders of the Steel Corporation which has already been discussed when it was observed that a sharp increase in unfilled orders following a broad bull market, usually forecasted lower stock prices. Since the unfilled orders of the Steel Corporation are given a weighting of 65.5% in the

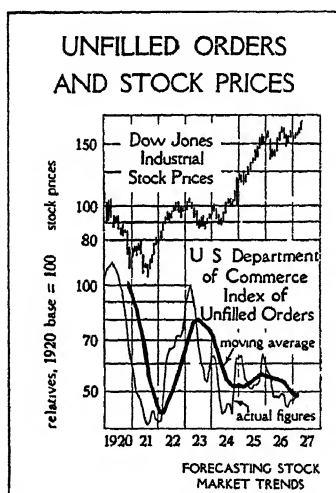


CHART 36

Department of Commerce Index, it follows that its fluctuations will be very similar to those of the Steel Corporation figures.

The relationship between manufacturing activity, the number of unfilled orders on hand, and the size of inventories, is interesting. Inventories reach a peak at about the same time that production is at its lowest point. Then inventories begin to decline, production begins to increase, and finally the number of unfilled orders increases.

SUMMARY

Of the retail stores discussed in the first part of this chapter, only the sales of music stores reflected the variations in industrial conditions to a marked degree. The sales of department stores, although dealing with luxuries as well as necessary commodities, are not so sensitive to business trends as the sales of stores dealing only in luxuries.

Statistics showing the size of inventories in certain businesses, and data indicating the amount of unfilled orders on the books of certain companies, were found to be useful in forecasting.

CHAPTER XIII

Volume of Trade

IN the industrial world men may add in three distinct ways to the wealth of the world and thereby contribute to business progress. The manufacturer may produce wealth by changing the *form* of raw materials. The railroad man may produce wealth by changing the *position* of the commodity. The middleman's or retail merchant's contribution is in storing goods until the *time* they are needed. Whether a man adds *form*, *place*, or *time* utility to the value of a commodity, he is in any case a useful producer of wealth.

The producers of agricultural, mineral, and various industrial commodities, it has been seen, add *form* utility to goods. In the discussion of retail store sales, the producers who add principally *time* utility were considered. But little has been said about the man who adds *place* utility to goods.

TRANSPORTATION BECOMES INCREASINGLY IMPORTANT

This class of producer has become increasingly important with the development of large-scale production, for the specialization of industry requires concentration in those sections of the world best suited geographically to particular industries.

An elaborate system of transportation has been built to bridge the gap between producer and consumer. The value added to a commodity by transporting it is apparent when one realizes that, under the present industrial system, a man in California wears a suit of clothes made in New York from cloth manufactured in Massachusetts from wool imported from Australia and dyed with

German dyes; he may wear shoes manufactured in St. Louis from leather tanned in Ohio from cattle grown in the Argentine; he may wear a shirt made in New York from cloth woven in England from cotton grown in Louisiana. Any data showing the volume of goods being transported about the country should afford a good measure of business activity.

RAILROAD CAR LOADINGS

Railroad statistics are the most logical source of information concerning the volume of transportation. Since 1918, the American Railway Association has published weekly the number of freight cars loaded on practically all roads in the country. These weekly figures are then combined into monthly records. In 1919 the association began to classify the data according to the types of freight handled, and to publish separate weekly car-loading records for seven different groups of commodities. These groups, with the proportion each bears to the total amount of car loadings, are shown in the following table:

	% of total loadings
Grain and grain products.....	4.88%
Live stock.....	3.47
Merchandise and less-than-carload (L. C. L.)	25.16
Miscellaneous.....	35.40
Coal and coke.....	20.07
Forest products.....	7.05
Ore.....	3.97
	<hr/>
	100.00%

Particular attention will be paid to the above classifications although the data are also classified according to the various sections of the country: Eastern, Alleghany, Pocahontas, Southern, and Western.

CERTAIN GROUPS UNRELATED TO GENERAL BUSINESS

The advantage of considering the car loadings of individual industrial groups, rather than of industry in general, lies in the fact that the conditions in some of these groups will not fluctuate with general business conditions. From what has been said before regarding agri-

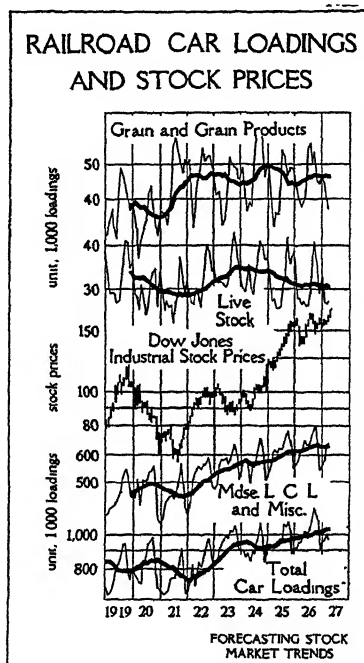


CHART 37

cultural production, it may be surmised that car loadings of grain and grain products as well as those of live stock will bear very little relation to industry, but will show the effect of fortuitous climatic and crop-growing influences. The car loadings of grain and grain products, with the very pronounced seasonal fluctuations removed by a moving average, are shown in Chart 37. It happens that

during the period for which they are available, the figures move in an inverse relationship to any of the indexes of production which have been discussed in previous articles. This pronounced inverse relationship is, however, merely a coincidence and cannot be expected to continue. Live-stock car loadings bear no definite relationship to general business conditions, either. Thus the figures for both grain and live stock are valueless as barometers of industrial conditions.

TWO GROUPS WHICH REFLECT RETAIL TRADE

Of the remaining groups to be considered, the figures of the miscellaneous and merchandise and less-than-carload groups fluctuate least. Both groups reflect principally the movement of manufactured commodities and are therefore primarily indicative of retail trade. They may be considered together because of the similarity of their movements. If compared with the department-store sales, which already have been shown to reflect general retail trade conditions, it will be seen that the car loadings of these two groups show movements similar to those in department-store sales, although car-loadings usually rise or fall a few months before similar movements are evident in department-store sales. Their close relationship to retail trade makes these groups less sensitive to general industrial conditions than data relating to the raw material groups.

COAL AND COKE LOADINGS FLUCTUATE WITH BUSINESS

The coal and coke group reflects manufacturing activity. These figures combine loadings of anthracite coal, bituminous coal, and coke. It may be remembered that anthracite-coal production shows an extremely even trend which is unrelated to the trend of general business,

whereas the production of bituminous coal moves very closely with industrial conditions. In the width of its fluctuations, coke production, although distinctly related to business conditions, fluctuates over a much wider range between periods of lively and dull business than bituminous-coal production did. In combining the car loadings of these three commodities—anthracite, bituminous, and coke—the stability of anthracite production balances the wide movements of coke production so that an average is reached which agrees remarkably with bituminous-coal production movements taken singly. Coal and coke car loadings are therefore closely allied with manufacturing activity, and serve as a good barometer of industrial conditions.

FOREST PRODUCTS SYNCHRONIZE WITH BUSINESS

The car loadings of forest products resemble very closely an index of manufacturing production. The rather wide seasonal variations apparent in these figures are due to the fact that car loadings for this group are habitually high in the late winter and spring months, and lower during the summer and fall months. A twelve-month *moving average* eliminates the seasonal movements and shows that, up to the present time at least, the trend of car loadings of forest products bears a close relationship to general business.

Car loadings of ore show a logical similarity to pig-iron production in amplitude and timing of fluctuations. These figures have extremely severe seasonal fluctuations, but after they are eliminated by a *moving average* it is evident that ore car loadings tend to move a few months *after* the trend of pig-iron production has changed.

TOTAL LOADINGS MORE SLUGGISH THAN INDIVIDUAL GROUPS

In the foregoing discussion of car loadings for seven different groups of commodities it was seen that two groups, grain and grain products representing 4.88% of

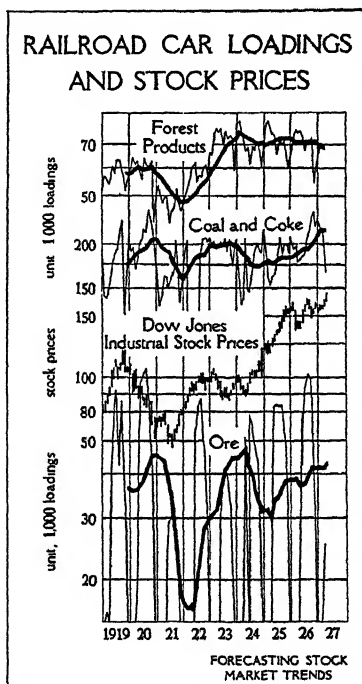


CHART 38

the total car loadings, and live stock representing 3.47% of the total, bore no relationship whatever to general business. The other groups followed industrial conditions to varying degrees, with merchandise, less-than-car-load, and miscellaneous car loadings representing 60.56% of the total; coal and coke, 20.07%; forest products, 7.05%; and ore, 3.97%. Since the fluctuations of none of these groups exactly coincide when they are com-

bined as shown in Chart 37, the resulting index is not so sensitive as some of the individual groups would be. And since grain and grain-products car loadings are included it means that 4.88% of the total is actually moving in a contrary direction from the general trend. The live stock, merchandise, L. C. L., and miscellaneous car-loadings figures constituting 64.03% of the total, move only casually with general business conditions. This leaves only 31% of the total to influence the data to move with industrial production. The variations of these other groups—coal and coke, forest products, and ore—are sufficiently energetic, however, to cause the total car loadings to move in the same direction as the volume of production, although in not such wide cycles.

CAR LOADINGS AND STOCK PRICES

Since the total car-loading figures as well as figures of several of the individual groups synchronize with industrial conditions, they must bear approximately the same relation to stock market trends as that which was found to exist between industrial activity and stock prices. Thus it is that sharp declines in the *moving average* of car-loading figures generally signify an advantageous point at which to buy stocks. The selling point for stocks is not so clearly indicated, but the stock market has usually been at a high point from seven to twelve months after the *moving average* of the more sensitive car-loading groups had begun to rise. Car-loading figures are so strongly affected by seasonal variations that without the mechanical corrections of some such device as the twelve-month *moving average* they seem almost useless.

FALLACY OF THE "BALANCE OF TRADE" THEORY

The transportation of certain kinds of commodities from producer to consumer within the country has been

shown to indicate fairly accurately the degree of business activity. In visualizing the machinery of transportation with its network of railroads, one becomes aware that the activity is not restricted by the boundaries of the country. Occasionally a train-load of commodities is transferred to a vessel and taken "out of circulation," so to speak. At the same time there may be a proportionate amount of some other commodity being imported—being transferred from foreign vessels to the railroads to be carried to the distributor and final consumer.

The benefits and dangers of foreign trade have in the past created a great deal of discussion. During the seventeenth and eighteenth centuries it was believed that in order to maintain the supposed keynote of a nation's power—a favorable "balance of trade"—there must be an excess of exports over imports. Men thought that a country should sell to foreigners more than it bought from them, and that the balance paid in hard cash was the "real wealth" of the country. Even today, it is amazing how many people still cling to this theory that the wealth of a country is represented by the inflow or outflow of specie. Yet the most elementary study of wealth, exchange, and money, shows that the "balance of trade" theory does not hold water.

In addition to the fact that the theory of a favorable trade balance has been generally discarded, the entire volume of the United States imports and exports constitutes only about 5% of the total amount of production of the country. The "balance" between imports and exports must obviously be a minute and relatively unimportant proportion of the country's total trade. Despite this fact, however, certain phases of foreign trade are definitely related to general business conditions within the country.

EXPORT FIGURES NOT SO ACCURATE AS IMPORTS

It is more difficult to obtain accurate figures of the amount of goods exported than it is of the volume of goods imported. Whereas a very careful account is kept of all imports by the customs officials, exports are recorded only on the clearance papers of ships. In spite of this weakness, however, they probably afford an approximation of actual conditions which is close enough for practical purposes. The various commodities imported and exported are subdivided into the following groups:

- Crude materials
- Foodstuffs and live stock
- Manufactured foodstuffs
- Goods partly manufactured
- Finished manufactures

Both exports and imports are quoted in dollars. In order to estimate the physical volume, therefore, it is necessary to consider fluctuations in the value of the dollar.

DO NOT FLUCTUATE WITH DOMESTIC BUSINESS

The volume of exports is naturally more indicative of foreign conditions than of business activity at home. The dollar value of all exports from the country for the past 22 years is shown in Chart 39. A comparison of this index with Bradstreet's or any other index of general commodity prices shows a remarkable resemblance between the two. They move in very close agreement at all times, except when exports showed an unusual increase during the early years of the war and during the post-war years, 1919 and 1920. It is also evident that the value of exports has been increasing at a faster rate than commodity prices. If allowance were thus made for the changing value of the dollar, it would probably be found

that between 1905 and 1926 the *physical volume* of exports had about doubled, not quadrupled as the dollar values indicate. At any rate, after price changes are taken into

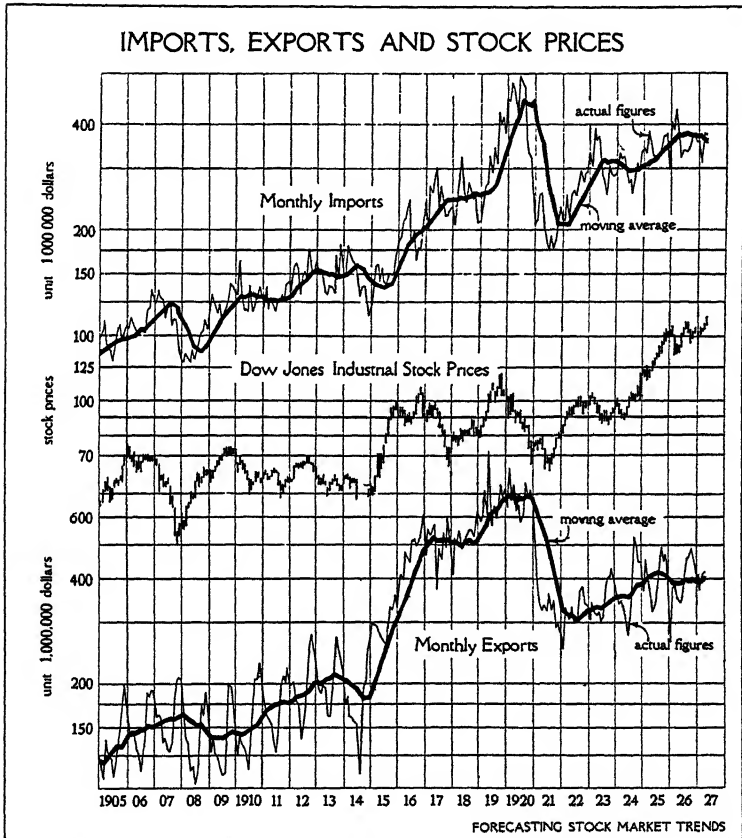


CHART 39

consideration, it is quite evident that the *physical volume* of exports does not fluctuate with the ebb and flow of business in the United States—it merely shows a gradual upward trend.

IMPORTS SYNCHRONIZE WITH BUSINESS CONDITIONS

Imports are barometric of conditions within the country, since more foreign articles will be used when business is good at home. This is substantiated by the fact that the value of imports fluctuate even more widely than the prices of domestic commodities. Of course, commodity prices within the country cannot be taken as an absolute measure of the prices of imported goods. The fact remains, however, that foreign goods must compete with our goods at our price levels, and these wide fluctuations in dollar values of imports indicate a cyclical movement in the *physical volume* of imports which exists regardless of changes in price levels.

Import data agree closely with the volume of production in the country and therefore bear a similar relationship to the stock market. The *actual figures*, if allowance is made mentally for seasonal variations, move as a rule with the trend of the stock market, although there is an occasional tendency for import figures to move somewhat later. The seasonal factor may be removed by taking a *moving average* of the actual figures. Generally, when the *moving average* starts to decline, stocks are a "buy"; and from seven to twelve months after it starts to rise, stocks are a "sale."

WHAT ARE BUSINESS CONDITIONS?

The last few chapters have dealt with almost every phase of business activity from which data were available. The discussion took up agricultural, mineral, and other raw-material production, was continued in the consideration of all kinds of manufacturing activity, and concluded with a study of retail distribution.

The consideration of such data as car loadings and foreign trade gives a more complete picture of activity

in many fields of business at the same time. Even these data, however, are not representative of business as a whole, for they do not include every kind of business activity from the mining of iron ore to operating a chain of theaters. Frequently in these chapters references have been made to the fact that "business conditions and stock prices are closely related." And as yet it has not been stated definitely just what kinds of businesses are included in the general term "business conditions."

BANK CLEARINGS AND DEBITS

Bank clearings appear to be an index of almost all kinds of business activity combined. They are probably more familiar to the average person than most of the data previously discussed. Clearings are one of the oldest series of data, and have been available since 1875. They are widely disseminated throughout the country and are generally accepted as indicative of general business activity.

New York City clearings are usually separated from those of the rest of the country because of the great influence of speculative transactions on the New York Stock Exchange. So bank clearings of most of the large cities, other than New York, are included in the data called "Bank Clearings Outside of New York City."

Since the establishment of the Federal Reserve System, another type of data, debits to individual accounts, has been computed. These figures are similar to bank clearings in their purpose, but are even more comprehensive. Bank clearings express only transactions between banks, while debits to individual accounts indicate the volume of checks drawn or "debited" against the bank accounts of individual depositors in all those banks which are members of the Federal Reserve System. Since about nine-tenths of the business in the country is transacted by

means of bank checks, either debits or bank clearings would appear to be a reliable source of information regarding general business activity.

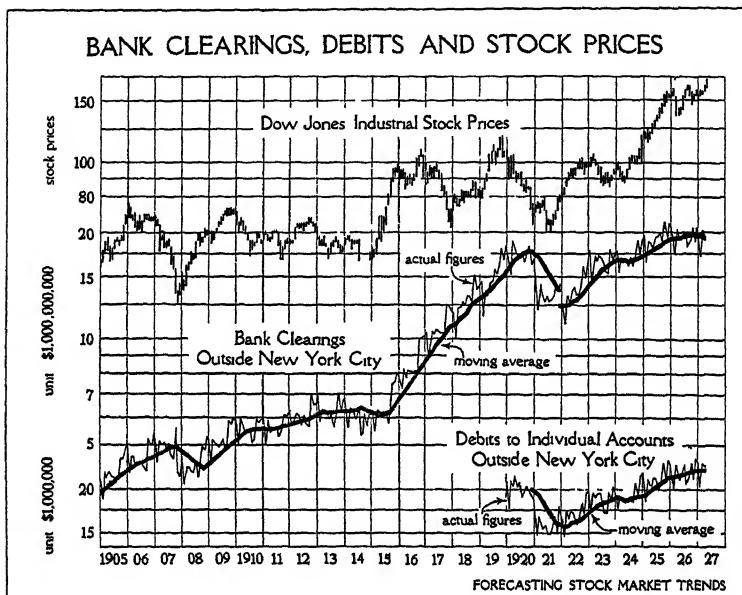


CHART 40

Chart 40 shows bank clearings and debits charted together. It was necessary in the case of 'clearings to make allowance for the fact that in January, 1922, a number of clearing houses ceased to issue figures. Since that time the statistics, including fewer cities, have been less representative of the country as a whole. Clearings are the older of the two series, so that if one wishes earlier statistics, he is forced to use them rather than debits. It is generally accepted, however, that debits are more representative of the business situation and will probably replace clearings in the future as a barometer of American business.

Although both clearings and debits usually show a close resemblance in their movements to the fluctuations in business activity, Chart 40 shows that at times they seem to bear almost no relationship to industrial activity. For instance, during the years from 1910 to 1914 and again from 1918 to 1920, they did not follow the trend of business. After 1915, also, there was a sharp rise in the figures, which has no counterpart in any of the various indexes of business activity.

The failure of the indexes at these points was due to the fact that bank clearings and debits were expressed in dollar values. When the value of the dollar fluctuates radically, they will of course be affected. If they are to be used to indicate *physical volume* of business, the constant variations in the value of the dollar must be taken into consideration; the figures must be deflated to be comparable to those indexes which are expressed in physical units.

DEFLATING BANK CLEARINGS

Of many attempts to deflate bank clearings figures so that they will measure *physical volume* of trade, one of the most notable is that made by Mr. Carl Snyder of the New York Federal Reserve Bank. He compiled an index of prices, to be used in deflating, which gave to different groups of prices the following weights: wholesale prices, 20%; wages, 35%; cost of living, 35%; and rent, 10%.

Mr. Snyder then deflated the figures of clearings according to this index so that they would indicate the approximate *physical volume* rather than the *dollar volume* of transactions. It was a very difficult matter to decide what weighting to give to wholesale, retail, or to any other group of prices; but the success which has been obtained in this case is demonstrated by the fact that the deflated

clearings figures agree remarkably in the direction of their swings with the figures of such a reliable business indicator as pig-iron production.

While pig-iron production cannot be called an infallible measure of the degree of business activity, since the production of a raw material fluctuates more widely between periods of good and poor business than do general business conditions, nevertheless it is the best single measure of general conditions available. The value of these figures has again been demonstrated by Mr. Snyder's work.

SUMMARY

Before carrying the search for forecasting data into the field of money and banking, it might be well to summarize briefly the conclusions reached in these chapters on production, consumption, and the volume of trade. It has been shown that crop *production* has almost no relation to business conditions. For certain special reasons, the *consumption* of cotton is related to general business. The discussion of mineral production showed that bituminous coal, and all of the data relating to the iron and steel industry—pig-iron production, blast furnaces, unfilled steel orders, coke, and steel-ingot production—were definitely related to general business conditions. The general indexes of production, calculated to show activity in many different fields of manufacturing, were also in agreement with the trend of general business.

Then, turning to data showing consumption, the sales of department stores and especially of music stores were found to be sensitive to changing business.

The volume of trade, as indicated by railroad car loadings, especially of ore, coal, coke, and forest products, moved closely with the ebb and flow of business. The volume of imports is related to domestic business con-

ditions, while exports are related to conditions in foreign countries. Finally, bank clearings and bank debits, which reflect general business more accurately than any other data, and take into account manufacturing, wholesale, and retail trade as well as most other types of business, move closely with the trend of pig-iron production. But because of the availability and simplicity of pig-iron production, it is more useful to show general business tendencies.

CHAPTER XIV

National Banks

CREDIT is an essential part of the present highly developed industrial system. Briefly, credit is the command over existing goods or money in exchange for the promise of an equivalent value in the future. About 90% of all business today is conducted by means of credit. Only minor transactions are on a cash basis. The universal use of credit is exemplified both in the housewife's charging at the corner store and in the borrowing of millions of dollars by large corporations through bond issues. A credit transaction results wherever, instead of paying cash, there is given a promise to pay in the future.

Naturally, any promise to pay must be considered a good risk before credit will be extended either to the housewife by the storekeeper or to the corporation by a bank. In order to make use of credit, it is necessary to give evidence of character, capacity, or collateral—one or all, depending upon the individual circumstances surrounding the transaction.

CREDIT MOST IMPORTANT IN INDUSTRIAL COUNTRIES

Credit becomes more essential as a country develops industrially, for in modern highly developed business systems many processes of manufacture and transportation are required before a commodity finally reaches the consumer. The payment for raw materials and labor would be greatly deterred, if it were necessary to wait until the finished commodity were paid for by the final consumer. Because of the large sums of cash involved, it is impossible for most manufacturers to advance the money for all the operations necessary to deliver the goods

to the consumer. Since materials, wages, and transportation charges ordinarily must be paid for immediately, manufacturers, wholesalers, and retailers must obtain money to meet the expenses incurred before they finally are able to collect for their respective parts in the process. In order to obtain the money with which to carry on current operations, they must resort to credit, which consists usually of borrowing from banks. Without access to credit, business throughout the country would be sharply curtailed.

There is no doubt but that credit may be greatly misused. Banks often make it too easy for business men to borrow in large quantities. Manufacturers desiring quantity production are apt to extend credit too readily to the wholesalers, who in turn often allow retail merchants to lay in too heavy stocks of goods. The retailers themselves are often too lax in their credit requirements from the final consumer. But, in spite of its abuses, credit is an indispensable part of the business system.

COMMERCIAL BANKS DEAL IN SHORT-TERM CREDIT

There are two kinds of banks which aid in supplying the credit needs of business men. The first is the regular commercial bank dealing in short-time credit. The second is the investment bank, which supplies the man who wants credit for long periods of time. The two perform very different functions and must be distinguished.

Briefly, the commercial bank lends credit for current operations; it supplies the money necessary to all phases of the manufacture of goods. The usual loan from these banks is for three months. It is seldom possible to secure a loan for more than six months, although loans are frequently renewed. It is generally understood, however, that loans are to be used only for *current* operations. The most distinctive feature of commercial banks

is that they not only lend the money received from their stockholders and depositors, but they are also legally empowered to *manufacture* money in the form of bank credits. This process will be described shortly.

Interest rates on all short-term credits such as call loans, time loans, commercial paper, and bank acceptances should logically indicate the activity of commercial banks, since their principal form of credit extension is in the form of short-term loans.

—INVESTMENT BANKS IN LONG-TERM CREDIT

In direct contrast with the commercial banks, the investment banks furnish long-term credits. They buy, hold, and sell notes, bonds, or stocks, the money from which is not essential for current business operations, but is used for plant extension or other permanent improvements. Investment banks are not allowed to manufacture money, but must for the most part use their own capital in the conduct of their business. They borrow money from commercial banks in order to finance current operations in much the same fashion any other business does. Since investment banks deal mostly in long-term credits, long-term interest rates are most closely related to investment-banking data.

It is important to bear in mind these essential differences between commercial and investment banks. The first deals in short-term credits, the other in long-term credits; the one is empowered to manufacture credit, while the other must rely upon its own resources much as any other business must do.

THE SOURCES OF CREDIT

The 30,000 or more commercial banks in the country are perforce something more than places where one may open a bank account against which to write checks. If

that were their only function, commercial bankers would lead the drab existence of a bookkeeper. A principal and most profitable function of the commercial banker is the making of loans to business borrowers. Money for these loans may be taken from (1) the capital supplied by the banks' stockholders, (2) money left by customers on deposit, or (3) credit "manufactured" in the manner prescribed by banking laws.

The banker knows from experience that only a few depositors will demand their money each day. By calculating the probable demand for currency during each day and each season, it is possible for a bank to lend out its surplus funds. All banks are, of course, required by law to keep a certain amount of "reserves" on hand at all times. However, by the judicious granting of loans, so that a certain amount of them will fall due each day, it is possible to make loans many times as great as the actual resources of the bank. This is only possible because usually those who borrow from banks do not want cash, but credit.

BORROWING FOR CURRENT OPERATIONS SOUND BUSINESS

In organizing a business, the promoters are ordinarily expected to furnish the necessary amount of capital to build a plant, buy equipment, and get the business well under way either from their own resources or by selling securities through an investment bank. In addition, the business is expected to have a certain amount of "working capital." A part of the money to finance current operations, however, the business man will often borrow from a commercial banker, especially when there are sharp seasonal fluctuations in the amount of money needed.

To accomplish this end, the business man will establish a "line of credit" with a bank, or possibly several such lines of credit with different banks. He will agree to

deposit his company's funds in the bank which seems best able to accommodate his particular needs. Then by selling the bank his note, or "discounting" the note, he will borrow on his line of credit. In return for this accommodation he usually agrees to keep his average bank balance above a certain figure, and to furnish periodic statements showing the financial condition of his company. As the business man begins to realize upon his operations, his bank account will be augmented by the continual deposit of money until he is able to repay his note from funds in his account.

THE SEASONAL FACTOR IN LOANS

Certain factors will naturally affect the size of a bank's loans. For one thing, various industries will have different seasonal requirements. A bank naturally attempts to distribute its loans among diversified industries so that the demand will not be great at one time of year and small at another. Often, when a bank caters principally to one industry, it is impossible to eliminate a marked seasonal demand for loans.

It is interesting to note in this connection that one of the principal advantages of branch banking is that, with a number of branches, a bank can scatter its facilities among various industries and thus equalize the seasonal factor in its loans. The fact that California state laws have permitted the establishment of such branches, together with the wide diversification of her industries, has led to a growth of branch banking on a scale not equaled elsewhere in the country.

NATIONAL BANKS, STATE BANKS, AND TRUST COMPANIES

There are three different kinds of commercial banks in the United States: national banks, state banks, and

trust companies. National banks, scattered throughout the country, receive their authority to conduct a banking business from the federal government. They are under the direct supervision of the Comptroller of Currency, to whom they must report periodically. State banks and trust companies receive their charters from the individual states in which they are located, and are under the direct supervision of the state banking officials.

Previous to the establishment of the Federal Reserve System in 1914, the state banks and trust companies were not related in any direct way to the national banks. While the national banks were a homogeneous unit and were under the guidance of federal laws, the state banks and trust companies were independent of any federal jurisdiction. Within each state the banks and trust companies are, of course, under the same state jurisdiction, but the various state laws regarding banking are radically different. As a result of this wide divergency between state banking systems, the only data of great value concerning banking operations throughout the country were the reports of national banks to the Comptroller of the Currency and the reports of the New York City Clearing House Banks. These latter banks are also representative of banking conditions throughout the country, because it is the practice of local banks to loan and withdraw idle funds through New York banks in the New York money market. Reports of New York banks are therefore useful in estimating general business conditions. It is necessary in examining the years before 1914 to depend for the most part upon these two sources of data.

ACTIVITIES OF COMMERCIAL BANKS

The principal operations of a commercial bank are (1) to lend money to its borrowing customers, (2) to

lend money on call, (3) to buy commercial paper, and (4) to buy securities. The primary concern of a bank is naturally to supply the credit needs of its business customers. The other activities will be indulged in only when the requirements of their regular business customers are satisfied.

Customers' demands frequently do not require all a bank's resources. Especially is this true when business conditions are dull. The bank may in such cases lend money on "call"; that is, it will make loans subject to call on any day, depending upon either the bank's or the borrower's needs. This type of lending is resorted to when a bank has extra funds which may be needed very shortly or for which a possible need cannot be accurately determined.

If a bank finds it can spare money for a longer period of time, it may buy "commercial paper," as the notes of business concerns are popularly called. This form of lending is done through *competition* in the open market with other banks for the purchase of the commercial paper. The interest rate that these notes carry is the "commercial paper rate."

Finally, if a bank has more money available than can be used for any of the above purposes, and there is no evidence of any immediate need for the funds, it may purchase various kinds of securities. Only surplus money which will not be needed for a considerable period of time is usually "loaned" in this manner.

The processes of lending on call, the purchase of commercial paper, and the purchase of securities will be discussed in later chapters. But, first, data showing the credit demands of a bank's regular business customers will be taken up. This type of borrowing is most closely allied to general business conditions, since more money will be required to carry on current operations in times

of business prosperity than when business is dull. But the size of a bank's loans is so closely allied with its deposits that both types of data fluctuate with business and the stock market.

RATIO LOANS TO LIABILITIES

It makes little difference from the standpoint of general business conditions whether the loans and investments of banks amount to \$650,000,000 with \$1,000,000,000 total liabilities, or whether they amount to \$6,500,000,000 with \$10,000,000,000 liabilities. In either case the ratio is the same—65%. This ratio of loans and investments to total liabilities, however, changes with business conditions. A simplified bank balance will perhaps show most clearly the reasons for such changes.

When a bank is first organized, before any business is transacted, its balance sheet in a very simplified form may appear as follows:

Assets		Liabilities	
Reserves	\$1,000,000	Capital	\$1,000,000

If depositors put \$1,000,000 in this bank against which they may draw checks, the balance sheet will be:

Assets		Liabilities	
<i>Reserves</i>	\$2,000,000	Capital	\$1,000,000
		<i>Deposits</i>	1,000,000

Up to this point the bank has not performed its function as a manufactory of credit. It now begins to lend money by *creating* deposits to the credit of borrowers, against which the borrowers may issue checks. While business is rather dull, the bank may lend \$3,000,000. In such a case the balance sheet will look as follows:

Assets		Liabilities	
Reserves	\$2,000,000	Capital	\$1,000,000
<i>Loans and</i>			
<i>Investments</i>	3,000,000	<i>Deposits</i>	4,000,000

After these operations, the ratio of "loans and investments to total liabilities" would be \$3,000,000

$$\frac{\text{---}}{\$5,000,000} = 60\%$$

Now if business continues to expand and \$1,000,000 additional loans and investments are negotiated, the balance sheet would read:

Assets		Liabilities	
Reserves	\$2,000,000	Capital	\$1,000,000
<i>Loans and Investments</i>	<i>4,000,000</i>	<i>Deposits</i>	<i>5,000,000</i>

The ratio of loans and investments to total liabilities has now increased to $66\frac{2}{3}\%$: \$4,000,000

$$\frac{\text{---}}{\$6,000,000} = 66\frac{2}{3}\%$$

From these simplified balance sheets it may be seen that as business becomes more prosperous and commercial banks extend more loans, either in the form of deposit loans or in the form of investments, the ratio of loans and investments to total liabilities rises. Conversely, when business conditions become dull, the ratio will decline.

NATIONAL BANKS' "CALLS" FURNISH USEFUL DATA

The reports of national banks to the Comptroller of the Currency will comprise the data to be considered first. The Federal Reserve System has so radically affected much of the banking data that it seems advisable to carry the figures back as far as 1890 in order to get the situation in true perspective. National banking laws require the Comptroller to call upon all national banks periodically to reveal their financial condition as of the "date of call." To prevent banks from padding their balance sheets, these dates are not fixed. The Comp-

troller merely announces that all banks must furnish statements as of a certain date. From 1890 to 1914 these reports were required five times a year; from 1915 to 1920, six times; in 1922 and 1923, five times a year; and more recently, three times a year.

National bank reports in response to "bank calls" are the only figures available showing conditions in the commercial banking system outside of New York over a long period of time. These data are most useful in the calculation of the ratios of "loans and investments to total liabilities." The meaning of such ratios and the method of computation has just been explained. Ratios since 1890, as calculated by A. A. Young in the "Review of Economic Statistics," are shown in Chart 41. A moving average has been computed by taking the average of the number of calls during a year. If there were four calls, the figure would be the average of those four; if there were five, the figure would be the average of those five, and so on. This chart succeeds fairly well in picturing the variations in the lending operations of commercial banks throughout the United States since 1890.

RATIO CHANGES WITH BUSINESS ACTIVITY

The most striking characteristic of these figures is that changes in the ratios of loans and investments to liabilities generally *follow* changes in business conditions. If the ratio curve is compared with an index of general conditions like pig-iron production, it will be seen that the pig-iron production curve precedes a rise or fall in the ratio by a period which usually varies from two months to a year. Undoubtedly the explanation is that during a period when production is going forward at a slow pace, producers are inclined to cut down production more than is warranted by actual conditions. They must, however, maintain a certain amount of bank loans even in periods

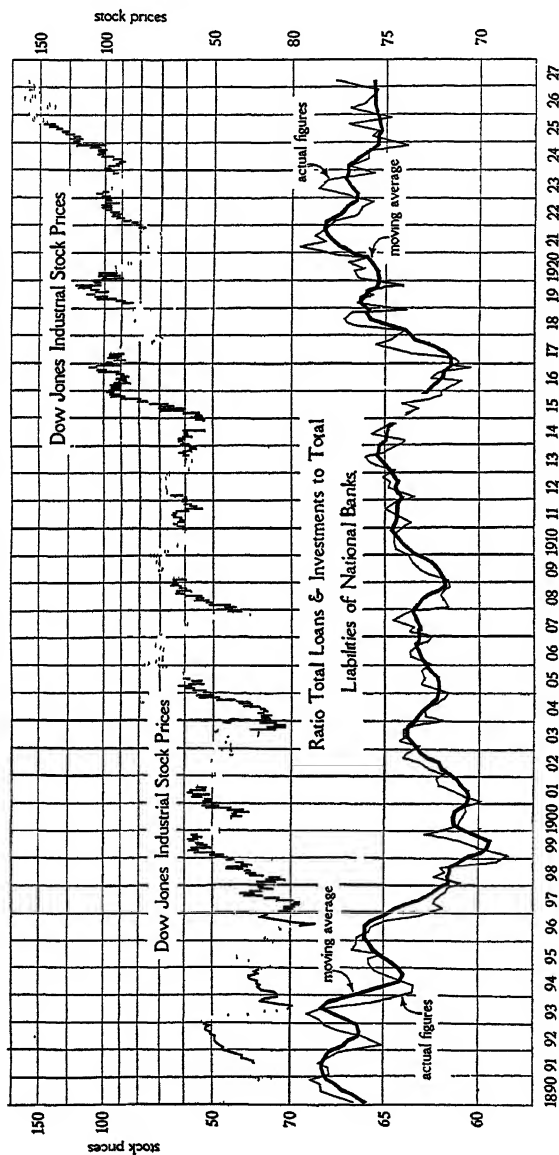
of depression, so that loans are not cut so drastically as production.

With an increased demand for goods, the business man finds himself with enough raw materials on hand to increase production to some extent before he requires more bank loans. In addition to this, the number of failures during a period of business depression due to the fact that certain companies have held too large bank loans, tends to make the average business man more than usually cautious to keep his loans down to a minimum. Business will go forward, then, as far as possible without additional borrowed funds. When, however, business increases to the point where additional funds are imperative if expansion is to continue, business men will again borrow. At this point, the ratio of "loans and investments to liabilities" commences to rise.

THE INFLUENCE OF COMMODITY PRICES

Bank loans continue to increase sharply during the period when manufacturing is reaching boom proportions. But when the reaction comes, bank loans will not decline immediately. In fact, they often rise even more sharply after manufacturing activity has reached its peak and is declining. This is explained by the fact that during such a period commodity prices are rising rapidly, a condition requiring additional capital with which to finance business. Then, too, when business activity has declined to the point where commodity prices fall sharply, many concerns find it necessary to borrow from banks unexpectedly in order to carry a large, slow-moving inventory with which the decline of business has burdened them. Again, at this phase of the business cycle, customers are not so prompt in making remittances, another condition creating an increase in the demand for banking capital. Finally, the business

CONDITION OF NATIONAL BANKS AND STOCK PRICES



FORECASTING STOCK MARKET TRENDS

CHART 41

situation begins to clear, inventories are worked off, and the ratio begins to fall.

There is a distinct relationship between the *actual figures* of the ratio and the stock market. Usually after a decline has been going on for several months, stock prices commence to rise sharply. When the ratio is rising, stock prices are generally approaching peak levels, and sometime during the latter part of the rise in the ratio the market begins a major decline. In this manner the *actual*, or uncorrected, figures forecast quite efficiently periods of rising stock prices. It is not so easy to tell from the *actual figures*, however, when a fall in stock prices is due, because the peak in stocks comes at varying times during a rise in the ratio.

MOVING AVERAGE OF RATIO CLOSELY RELATED TO STOCKS

A *moving average* of ratios, in smoothing the irregularities of the actual figures, moves at a slightly later date than the actual figures and seems to have a more useful relationship to stocks. Usually it would have been profitable to buy stocks when the *moving average* began to fall. Although such a turn in the average has not always indicated the lowest level of stock prices, it may be seen from the chart to have approximated the low point fairly well.

Again, as in the case of the actual figures, the selling point is not so clearly indicated, although, as a rule, the point at which the *moving average* of the ratio has turned upward marked an advantageous time to sell stocks. Sometimes the highest point in stock prices has come from one to five months later, and at other times, as in 1917, 1920, and 1923, it has come earlier. In the long run, however, since it is futile to hope for a perfect barometer, these slight irregularities should not detract materially from the value of these statistics.

In the upper part of the chart, when this barometer indicated rising stock prices according to the method of reading just described, stock prices are shown in black; when falling stock prices were indicated, they are shown by a light, broken line.

The principal disadvantage of this barometer is that the statistics must be taken from reports which were obtainable at most not over six times a year. Moreover, they have recently been required only three times yearly, because the Federal Reserve weekly figures serve approximately the same purposes, and the Comptroller of the Currency has found it less necessary to check up the condition of national banks separately. The data are thus becoming a less efficient barometer, and one is led to rely more upon other banking figures, such as data of the New York Clearing House Banks, and the newer Federal Reserve Member Bank statements.

CHAPTER XV

New York Banks—Federal Reserve Banks

THE principal function of a commercial bank is to help finance the current operations of business men. The short-term credit needs of the business community are their first consideration. After those demands are satisfied, banks may employ their surplus credit by lending money on call, buying commercial paper, or by buying longer-term securities.

Since their primary concern is to cater to the current credit needs of business men, it follows that data pertaining to the operations of commercial banks will be closely related to the trend of business conditions. In the preceding chapter, the size of the loans, discounts, and investments of national banks were seen to be indicative of general business conditions. When business is prosperous, loans, discounts, and investments rise relatively faster than the total liabilities, and they decline more rapidly in times of poor business. The ratio between the two figures is therefore definitely linked to business conditions and stock prices.

LIMITATIONS OF NATIONAL BANK DATA

The statistics are inadequate, however, for two reasons. In the first place they include, of course, only one kind of bank,—national. This objection in itself is not serious, for as a rule national banks are larger and more important than banks operating under state charters.

A more important handicap is that national bank data consist only of reports to the comptroller in response to "bank calls." Since the calls must come at varying intervals in order to take the banks by surprise, statistics taken from these reports lack the periodic regularity

which is so desirable in economic data. Moreover, bank calls come too infrequently to be of any great value.

NEW YORK CLEARING-HOUSE FIGURES

Data from banks within New York City are more useful. The New York Clearing House has long made a practice of issuing weekly reports showing the conditions of its member banks whose transactions are so influential in national financial affairs that they reflect business conditions throughout the country. In addition, New York banks are affected by security market conditions, because of the heavy demands on these banks from investment bankers and stock brokers.

The two series of data taken from the New York Clearing House Banks with which this discussion will be concerned are "average deposits" and "loans and discounts." The figures were taken from data compiled by Prof. Warren M. Persons of the Harvard Economic Service.

DEPOSITS RELATED TO BUSINESS

During periods in which there is little demand for funds for commercial purposes, banks outside of New York City deposit their idle money in New York banks to be loaned on call in the security markets. When the demand for commercial loans increases, this money is withdrawn and loaned to local business men. The effects of this practice are apparent in the fluctuations of the New York bank deposits, which bear a definite relationship to general business conditions.

When business is extremely active, the deposits of New York Clearing House Banks will have been declining and will be at a low level. Outside banks have withdrawn their funds in order to supply the increasing local demand for commercial loans.

After business has reached a peak and curtailment

begins, outside banks again begin to deposit those funds which are no longer in demand. The highest point in the deposits of New York banks is reached about six or eight months after the low point in business has been registered. This spread is accounted for by the fact that it takes some time after business has suffered a reverse for outside banks to get their loans paid up.

As business activity returns to normal, outside banks find less need to employ their surplus funds in the call money market, and New York deposits increase at a slower pace. After business is once more definitely on the increase, New York deposits again decline as the money is withdrawn for commercial purposes.

BANK DEPOSITS AND THE STOCK MARKET

From Chart 42 it may be seen that the *moving average* of the deposits of New York banks moves with the trend of the stock market. This correspondence between the two is caused by the fact that the *moving average* lags behind the actual figures. It is preferable in this case to use the *moving average* in order to eliminate seasonal and other irregularities. Usually after the *moving average* turns upward, stock prices either have already turned upward a month or two before or are due to rise shortly. When the *moving average* shows a tendency to flatten out or decline after a prolonged rise, stock prices are usually at a high level.

When the *actual figures* of deposits have declined sharply from a peak, they indicate a probable decline in stock prices a few months later. They usually reach a low point before stocks do.

From 1914 until 1921, deposits failed to show their conventional movements, because the establishment of the Federal Reserve System upset the normal functioning of the banking system. Then, too, since the figures deal

CONDITION OF NEW YORK CLEARING HOUSE BANKS AND STOCK PRICES

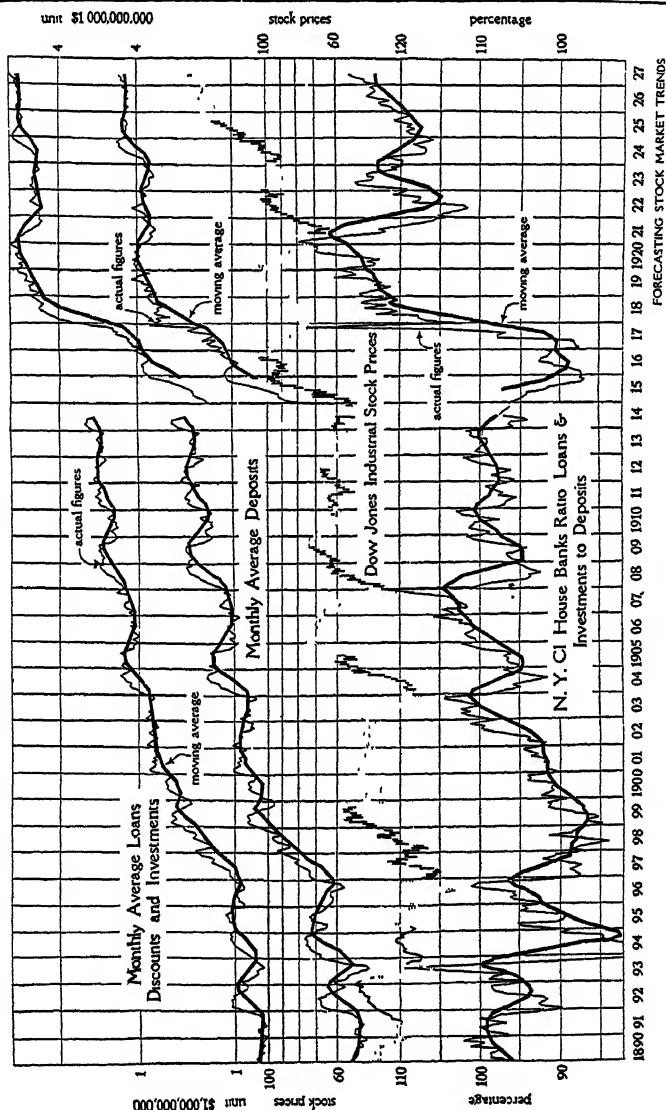


CHART 42

FORECASTING STOCK MARKET TRENDS

in dollar values, they were affected by the inflation of currency which accompanied the war. Because they are not affected by currency inflation, ratios have a distinct advantage over dollar figures in the estimation of banking conditions.

LOANS AND DISCOUNTS RELATED TO DEPOSITS

"Loans and discounts" including loans, discounts, stocks, bonds, and mortgages owned by the bank, have definite seasonal movements. They rise during the winter months to March, fall slightly to May, and rise steadily again throughout the summer, reaching a maximum in August. They decline through the autumn months and reach the low point of the year in December. The moving average helps to smooth out the seasonal influence.

Most of the deposits in the New York banks during periods of dull business are placed there by country banks who wish them loaned in the call money market. Thus loans are closely related to deposits; for when deposits decline, there are fewer funds to be loaned. This relationship is apparent when the two series are compared.

The relation of "loans and discounts" to stock prices will be similar to that witnessed between "deposits" and stock prices. When the *moving average* of "loans and discounts" has been declining for several months and turns upward, stock prices have already risen or are about to rise. Stocks are usually at a high level when the average flattens out after a prolonged rise.

LOAN-DEPOSIT RATIO

Neither "deposits" nor "loans and discounts" is so reliable as the ratio between the two, as computed by Professor Persons. It is evident from Chart 42 that such

a ratio fluctuates inversely with the two items of which it is composed.

Deposits fluctuate more widely than loans, because outside banks flood the New York Clearing House Banks with their surplus funds during periods of depressed business, and withdraw these funds quickly when business becomes active. Since it is more difficult for the New York banks in periods of dull business and low stock prices to loan money, the difference between deposits and loans widens at such times, and the ratio increases. As business improves, the funds are withdrawn more rapidly than the New York banks are able to reduce their loans and investments; and since the spread between loans and deposits becomes less, the ratio falls. Thus, when there is a widening difference between loans and deposits, the ratio between the two is rising; when the difference between loans and deposits is narrowing, the ratio is falling.

A ratio which expressed the same sort of relationship for national banks was discussed in the previous chapter. Both "loan-deposit" ratios are very similar, except that the ratio for the New York banks fluctuates more widely, because at times there is a greater spread between the loans and deposits of New York banks.

RATIO FORECASTS STOCK PRICES

In Chart 42 the seasonal variations of the loan-deposit ratio for New York banks have been removed by a moving average. The *moving average* proves to be an even more sensitive barometer of stock market conditions than the ratio for national banks. Moreover, the New York bank figures can be computed on a regular monthly basis.

It has been observed that the ratio fluctuates inversely with the trends of either loans or deposits separately. It is also noticeable that the peaks and low points of the

ratio occur at different times than either of its constituents. The *moving average* of the ratio indicates stocks are at a low point and a good "buy" when it turns downward. Sometimes the indication misses the absolute low point in a bear market by a month or two, but usually it approximates the critical points closely enough to be useful. The most advantageous point at which to sell stocks occurs usually about four months after the *moving average* turns upward.

In Chart 42 during those periods in which the loan-deposit ratio signaled higher stock prices, according to the above interpretation, the stock market is shown in solid black. During those periods in which falling stock prices were indicated, it is shown by a light line. It is apparent that, with a few exceptions, the most notable being the period of inflation during the war, this barometer would have served as a dependable guide to the common stock owner.

FEDERAL RESERVE STATISTICS

The data examined up to this point have consisted of those statistics which were most useful before the establishment of the Federal Reserve System. The reports of national banks and of New York Clearing House Banks are among the oldest financial records available, and serve as valuable barometers in spite of their limitations.

The Federal Reserve System has simplified the problem of collecting bank data. Since 1921, members of the System, including almost 800 banks in all sections of the country, have furnished weekly reports of their condition. These member banks include most of the larger banks of the country, with aggregate banking reserves of somewhat over \$15,000,000,000. The Federal Reserve Board combines the figures into a consolidated banking state-

ment for the entire country. In addition to this general statement, the data are also arranged to show conditions in New York, Chicago, and in banks located in "Federal Reserve cities," "Federal Reserve Branch cities," and in other selected cities.

Although these data have been available for a relatively brief period of time, such detailed and comprehensive material in the future should prove to be valuable in forecasting. It has been shown that the less inclusive data obtained from the National or New York Clearing House Banks were useful in this respect. If the Federal Reserve member bank figures are charted, they should show similar fluctuations. Furthermore, since these new data include state banks and trust companies as well as national banks, they should in the future be of considerable value.

DEFICIENCIES OF THE OLD BANKING SYSTEM

Before the Federal Reserve Act, our banking system had several distinct drawbacks. First, banks had no adequate facilities for the expansion and contraction of credit and currency to fit the varying needs of the business community. Bank credit and currency were so stable that, at times, banking resources exceeded the demand, and, at other times, it was almost impossible for business men to get the necessary banking accommodations with which to carry on business.

There was no way, either, for banks to exchange reserves, for there were no means by which a bank with surplus reserves might place them at the disposal of a bank in need of funds. Thus the banking resources of the country were not utilized to the fullest extent.

To remedy these conditions, the Federal Reserve System established twelve Federal Reserve Banks in various sections of the country to serve as "bankers'

banks" and to do business only with the banks which joined the system. Each member bank deposited with the Federal Reserve Bank in its district the amount required of that bank as legal reserve. Against this reserve the member bank may extend credit to its borrowers.

RESERVE REQUIREMENTS

After depositing its legal reserve with the Federal Reserve Bank in its district, the simplified balance sheet of a member bank might look as follows:

Assets		Liabilities	
Reserves (with Fed. Res. Bank)	\$2,000,000	Capital	\$1,000,000
Loans, discounts and investments	19,000,000	Deposits	20,000,000
	<u>\$21,000,000</u>		<u>\$21,000,000</u>

A bank is required by law to keep on reserve at all times a certain amount of money, usually between 8% and 13% of deposits, depending upon the location of the bank. In the above case the reserve is

$$\frac{\$2,000,000 - \text{Reserves}}{20,000,000 - \text{Deposits}} = 10\%$$

THE NEW BASIS FOR CREDIT EXPANSION—

The credit expansion possibilities of the Federal Reserve System are best shown by the balance sheet of the above bank after it has "rediscounted"—at the "Federal Reserve rediscount rate"—some of the notes received from customers.

The balance sheet above shows that this particular bank has expanded its credit facilities to the legal limit—10%. So, in order to make credit facilities more elastic,

the Federal Reserve System allows the member banks to rediscount at the Reserve Banks some of the notes received from member banks' customers on loans granted. The member bank may either leave the proceeds from the rediscounting with the Federal Reserve Bank to be considered as additional reserve against which it may further extend credit to its customers, or the member bank may accept currency—usually in the form of Federal Reserve notes—for the rediscounted paper. In case the member bank wishes to follow the former practice and expand its loans further, its balance sheet may appear as follows:

Assets		Liabilities	
Reserves (with Fed. Res. Banks)	\$2,000,000	Capital	\$1,000,000
<i>Rediscounts</i>	<i>100,000</i>	<i>Deposits</i>	<i>21,000,000</i>
	<hr/>		
Total Reserves	\$2,100,000	<i>Loans redis-</i>	
		<i>counted</i>	<i>100,000</i>
<i>Loans, discounts and</i>			
<i>investments</i>	<i>20,000,000</i>		
	<hr/>		<hr/>
	\$22,100,000		\$22,100,000

In this case the member bank, by rediscounting \$100,000 worth of its customers' notes and leaving it as legal reserve at the Federal Reserve Bank, has been able to extend \$1,000,000 more in credit to its commercial borrowers; for its reserve after making additional loans to this amount would still be

$$\frac{\text{Total Reserves—\$2,100,000}}{\text{Deposits—21,000,000}} = 10\%$$

This rediscounting device which permits banks to expand and contract credit as needed is the most characteristic feature of the Federal Reserve System.

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—AND THE NEW BASIS FOR CURRENCY EXPANSION

It is also possible, under the new banking system, to expand cash resources as they are required by the business community. Member banks may call upon the Reserve Banks in order to expand credit in the manner shown above, or they may call upon the Reserve Banks to furnish them with currency to supply customers' needs. This latter function is best illustrated by a typical balance sheet of a Federal Reserve Bank—the bankers' bank.

The capital of the Reserve Banks is furnished by its member banks, and their resources consist of the legal reserves deposited by the member banks. When the Federal Reserve Bank has obtained the initial capital from its member banks, and before it has actually functioned as a bankers' bank, a balance sheet might be as follows:

Assets		Liabilities	
Reserves	\$10,000,000	Deposits (member banks' reserves)	\$9,000,000
		Demand Liabilities	\$9,000,000
		Capital	1,000,000
	<hr/>		<hr/>
	\$10,000,000		\$10,000,000

From this statement the Federal Reserve Bank will compute what is commonly known as the "Reserve Ratio" as follows:

$$\frac{\text{Reserves—} \$10,000,000}{\text{Demand Liabilities—} 9,000,000} = 111\% +$$

The member banks, needing cash to supply the day-to-day needs of the people, now call upon the Reserve Bank to supply them with currency. So the Reserve Bank issues \$1,000,000 of currency in the form of Federal

Reserve notes to member banks, who in exchange rediscount \$1,000,000 of their customers' notes at the Federal Reserve Bank.

Assets		Liabilities	
Reserves	\$10,000,000	Deposits (member bank reserves)	\$9,000,000
<i>Loans and discounts</i>	<i>1,000,000</i>	<i>Federal Reserve notes</i>	<i>1,000,000</i>
			<hr/>
		Demand Liabilities	\$10,000,000
		Capital	1,000,000
	<hr/>		<hr/>
	\$11,000,000		\$11,000,000

The reserve ratio is now:

$$\frac{\text{Reserves—\$10,000,000}}{\text{Demand Liabilities—10,000,000}} = 100\%$$

Member banks now finding a demand for credit beyond the limits of their own immediate resources, rediscount \$10,000,000 worth of notes in order to increase the legal reserve against which they can extend further credit to their customers. The Federal Reserve Bank's statement will then be:

Assets		Liabilities	
Reserves	\$10,000,000	Deposits (member bank reserves)	\$10,000,000
<i>Loans and discounts</i>	<i>11,000,000</i>	<i>Federal Reserve notes</i>	<i>1,000,000</i>
			<hr/>
		Demand Liabilities	\$20,000,000
		Capital	1,000,000
	<hr/>		<hr/>
	\$21,000,000		\$21,000,000

By rediscounting the customers' notes of member banks and issuing \$1,000,000 in Federal Reserve notes

and placing \$10,000,000 against reserves of member banks, the reserves of the Federal Reserve Bank have been reduced so that the reserve ratio now stands at 50%:

$$\frac{\text{Reserves—} \quad \$10,000,000}{\text{Demand Liabilities—} \quad 20,000,000} = 50\%$$

Thus by extending this accommodation to a member bank in order, indirectly, to supply the credit or currency needs of the business community, the reserve ratio has declined from 111+ % to 50%. In this manner a decline in the reserve ratio occurs when business is making heavy demands upon banks for credit and currency. When business activity slackens and loans are repaid to member banks, there is less need to rediscount, and the reserve ratio rises.

THE RATIO IN GREATER DETAIL

However, it is not only the expansion and contraction of credit and currency in circulation that causes the reserve ratio to rise and fall. The ratio may be affected by additional factors; and in order to understand the true condition of the Federal Reserve Banks, it is necessary to examine in greater detail the individual items which make up the ratio.

The reserve ratio for this purpose must be broken down into more detailed parts:

$$\text{Reserves} = \text{Gold and Certain Other Legal Money}$$

$$\text{Demand Liabilities} = \text{Deposits and Federal Reserve Notes}$$

Changes in any one component will cause the ratio to change unless all items change proportionately. To understand the extent to which the ratio indicates actual credit expanding possibilities of the Reserve Banks, which, in turn, reflect commercial banking conditions throughout

the country, it is necessary to examine each part of the ratio separately.

"BILLS REDISCOUNTED" FLUCTUATE WITH BUSINESS

The outstanding function of the Federal Reserve Banks is the rediscounting of notes presented by member banks. The member banks, by rediscounting its customers' notes, is allowed to extend credit beyond the limit provided by the old banking system. In times of dull business, when member banks have less demand for their funds, they have no occasion to rediscount at the Reserve Bank, and consequently the number of *bills rediscounted* is small. As business grows more active, it becomes increasingly necessary to rediscount customers' notes, and the number of bills rediscounted at the Federal Reserve Bank begins to rise. Thus a small volume of *bills rediscounted* signifies dull business; a large volume, active business.

As is typical of all data indicating the amount of borrowing from commercial banks, changes in the amount of *bills rediscounted* follow changes in business activity by a few months. Pig-iron production, for instance, declines or rises several months before the trend of discounts changes.

Except for the war period, during which government borrowing operations obscured the normal trend, a definite relationship between *bills rediscounted* and stock prices was apparent. Stocks would generally have been a "buy" when the *moving average* of *bills rediscounted* began to fall, and a "sale" when the *moving average* began to rise. Of course, the data have been actually available for such a short time that the apparent relationship must be based largely on theory. This theory of an inverse relationship, however, has been upheld by the movements of the *moving average* during the past few years.

As stated before, in rediscounting at the Reserve Bank, a member bank will ask either for currency, usually in the form of Federal Reserve notes, or for an increase in

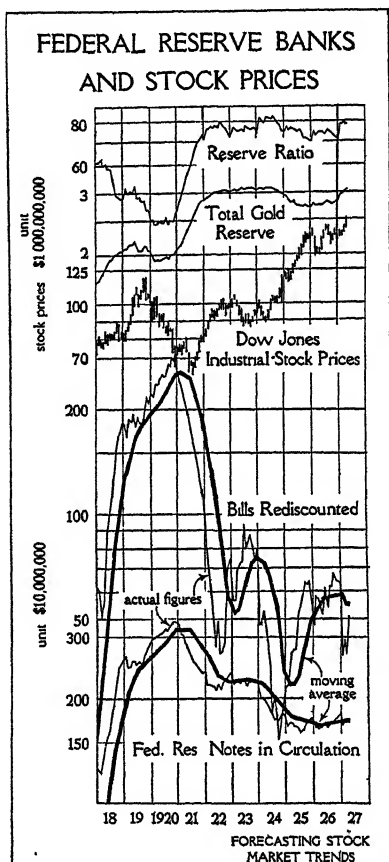


CHART 43

its legal reserves which will permit the extension of further credit to customers. Thus *rediscounts serve as a measure of the demand liabilities* used to make up the reserve ratio, since demand liabilities are composed of

deposits (legal reserves of member banks) and Federal Reserve notes in circulation.

NOTES IN CIRCULATION FLUCTUATE WITH COST OF LIVING

Although considerable importance is often attached to the amount of *Federal Reserve Notes in Circulation*, this item is relatively unimportant in forecasting general business conditions. The demand for money changes with business conditions, to be sure, but these changes are largely due to changes in the cost of living. For as business goes from prosperity to dulness, causing prices to rise or fall, the amount of pocket money which the consumer must carry, varies. *Federal Reserve Notes in Circulation* fluctuate moderately, then, and are less useful in stock market forecasting than data which are affected more directly by changes in the tenor of business activity.

GOLD SUPPLY DISREGARDS BUSINESS CONDITIONS

The *gold reserve* item of the Federal Reserve Bank balance sheet represents either the metallic gold held in the Reserve Bank vaults, or gold certificates issued against metallic gold held in the vaults of the United States Treasury. When gold is imported into or exported from the country, usually one or the other of these two stocks of gold is affected. These gold reserves, which are the basis upon which credit is extended by commercial banks throughout the country, are dependent upon both the production of gold and the international movements of gold. And both the production of new gold and the international movements of gold are very erratic and not directly associated with current business activity within the United States, so that the fluctuations of *gold reserves* of Reserve Banks are quite independent of movements of domestic business. *Gold reserves*, although of

tremendous importance in determining the amount of credit which may be extended for business purposes, have been for the most part quite useless in determining either business movements or the stock market trend.

CONCEALING THE SIZE OF THE GOLD STOCKS

It is interesting at the present time, when the country's gold holdings are of such unusual size, to note that the Federal Reserve Act permits the Reserve Banks to issue gold certificates to member banks instead of Federal Reserve notes. The issuance of either gold certificates or Federal Reserve notes will lower the reserve ratio, but the issuance of gold certificates has a much more pronounced effect. It calls immediate attention to the abnormal gold supply.

The foregoing analysis has shown that while the reserve ratio is supposed to indicate the soundness of the general commercial banking structure, only one of the several components is useful in forecasting general business conditions. The ratio is affected by international movements and the production of gold, factors quite outside the control or influence of general business movements. The one item, *Bills Rediscounted*, however, shows a close sympathy with general business trends and may be used advantageously as a business and stock market barometer.

CHAPTER XVI

Money Rates

INFORMATION can be obtained from bank balance sheets which indicates the *volume* of banking business in much the same manner that pig-iron production indicates the volume of production in the iron industry, or crude-petroleum production in the oil industry. In every case, however, *volume* is only one phase of the situation. In order to obtain a more comprehensive view of conditions it is advisable to consider *prices*, or the *value* of the commodity produced.

The commodity which banks offer for sale is called credit, and it is customary to speak of the "price" of credit as the *interest rate*. One may question why it is necessary to pay for the use of capital. Why are borrowers willing to pay, and why do lenders demand the payment of interest?

Capital is valuable because it is capable of producing further wealth. In this respect it is as necessary to the production of goods as are raw materials, wages, or good managers.

Moreover, one who loans money is depriving himself of the use of that money for productive purposes. He has transferred the wealth-producing power of his capital to someone else. He is unable, temporarily at least, to use that money for the satisfaction of his own needs and desires.

There is also an element of risk involved in lending. It is always possible that the borrower will not be able to return the money at the appointed time. For all of these reasons, a lender requires a certain amount of interest to make lending a worth-while and safe procedure.

BORROWING ON A LINE OF CREDIT

It was stated in a previous discussion of commercial banks that their foremost consideration is to supply the credit and currency needs of their regular business borrowers who have lines of credit with them. Only after these needs are satisfied does a bank consider lending the remaining funds through the medium of commercial paper, call loans, or longer-term securities.

In considering variations in the interest rates on different kinds of credit, it seems logical to begin with this fundamental form of credit extension: loans made against lines of credit. Whenever a bank extends credit to business borrowers in this way, there is a close personal relationship between the bank and the business man. The business man arranges for the use of a definite amount of credit whenever the current demands of his business require more money than he can himself supply. The bank agrees to loan this amount whenever necessary, but requires of the business man a frequent and detailed report of the condition of his business and also that he keep his average bank balance above a certain figure.

INTEREST ON LINES OF CREDIT RELATIVELY STABLE

Such a close, almost personal, relationship between the bank and the business borrower builds up a regular clientele for the bank. The interest rate charged for this type of loan does not vary so widely or so sensitively as it would if there were a more direct competition between different banks to lend to the same borrowers. The competition between banks to make this type of loan rests largely upon the quality of the service rendered rather than upon a one-eighth of 1% lower interest rate. Changes in the rate of interest charged are therefore not sensitive to sudden changes in business conditions. More-

over, since there is no open market in which fluctuations in these rates are recorded, the data are difficult to obtain.

A bank will often find that it has additional idle funds after all business customers have been accommodated. If it believes that this extra money will not be needed for a considerable length of time, it will probably invest some of the money in commercial paper. If it is believed that the money will be needed shortly, the granting of call loans will probably be contemplated.

COMMERCIAL PAPER

Business men may borrow money through the sale of commercial paper, as well as against lines of credit. "Commercial paper" refers to the promissory notes of business concerns. These notes are very similar to those used in establishing a line of credit. Commercial paper is almost always sold through a note broker, who receives a certain commission for his services. This type of borrowing, which business men may use to supplement their regular lines of credit, is therefore indirect. Because commercial paper is sold usually to banks which generally deal only with short-term credit, it seldom carries a maturity date more distant than six months.

Since commercial paper is sold in the open market, there is not the close relationship between lender and borrower that exists under a line of credit. The open-market borrower enters a cold-blooded contract. There may be no extension of his loan. He must be prepared to pay fully on the date of the expiration of his loan, and is therefore forced to keep his finances in sound condition. Because of this necessity, banks often recommend that their customers resort to commercial-paper borrowing to supplement their regular lines of credit. The borrower, too, is eager to borrow in the open market whenever possible, because in that way he is able to obtain lower interest rates.

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RATES SENSITIVE TO CHANGING BUSINESS CONDITIONS

There is no organized market for commercial paper. A few large commercial-paper brokers are in direct contact with both the banks and business borrowers. From them, financial newspapers obtain the going rate on various classes of commercial paper. Rates are well defined on each class of paper, because of the sharp competition among note brokers and because of the standardized methods used in classifying business borrowers.

The rates are very sensitive to changing business conditions, because the open market is a market of surplus bank credit. Since there is no obligation on the part of commercial-paper buyers always to purchase a certain amount of paper, banks are quick to shut down on the supply of funds when their regular business borrowers require larger loans during times of business prosperity. On the other hand, in periods of dull business, banks are very anxious to employ their idle funds through the purchase of paper. As a result of the sharp changes in supply and demand of funds, interest rates on commercial paper are very sensitive to changing business conditions.

DIFFERENT CLASSES OF COMMERCIAL PAPER

Commercial paper is classified according to both the industry in which the business is engaged and the standing of the borrower in that industry. Thus, New England mill paper has in the past habitually enjoyed a slightly lower rate than most other industries. In addition to this distinction, certain borrowers are classified as "prime" or "choice," others as "good," and so on, each class of borrower paying a slightly different rate for their loans.

Before the establishment of the Federal Reserve System, the rates on longer-term credit—four to six-month commercial paper—were considerably higher than rates on

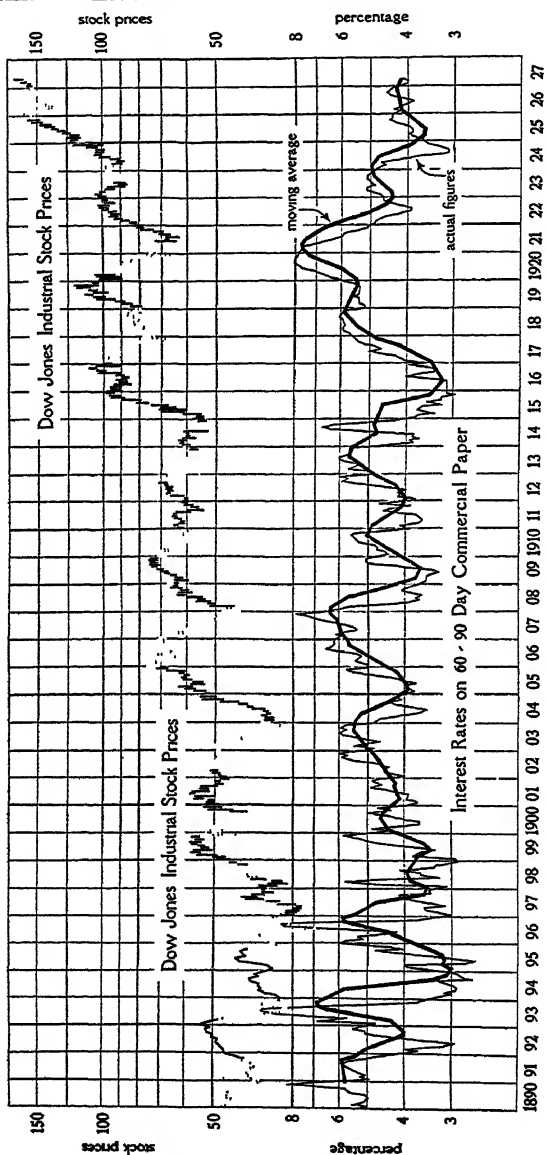
60 to 90-day commercial paper. This was mainly because of the added risk in those days of extending longer-term credit. The new banking system has largely remedied this situation, so that at present the interest rates on longer-term credits differ only slightly from short-term rates. In fact, in recent years four to six-month paper has gained in popularity over 60 to 90-day paper, both with the borrower and the bank.

RESERVE SYSTEM REDUCES SEASONAL VARIATION

The monthly average rates on 60 to 90-day "choice" commercial paper, as quoted by note brokers in New York, are shown in Chart 44 with the Dow Jones averages. Previous to the establishment of the Federal Reserve System, a sharp seasonal fluctuation in commercial-paper rates is evident. The rates declined after the early spring trade requirements of business men and planting requirements of farmers had been met, then increased rapidly into the fall months, reached a peak at the height of the "crop-moving" season in October, and remained at a fairly high level through the Christmas season. The Federal Reserve System in providing a more flexible credit system has minimized seasonal influences. The Harvard Committee on Economic Research has estimated that these seasonal variations have been reduced to one-half their former intensity.

It is necessary, however, to continue to make seasonal corrections in the data if they are to be used for forecasting purposes. Not only have the figures been erratic in the past, but they are affected even today by seasonal influences. The figures used here have been corrected by means of a moving average.

COMMERCIAL PAPER RATES AND STOCK PRICES



FORECASTING STOCK MARKET TRENDS

CHART 44

COMMERCIAL PAPER IN RELATION TO STOCK PRICES

The interest rates on commercial paper fluctuate in very definite cycles. There is a natural correlation between these cycles and the loan-deposit ratio of commercial banks, since commercial-paper rates reflect directly the surplus credit of banks available to business borrowers. When banks are increasing their loans, the supply of money which may be invested in commercial paper is reduced and the interest rate on this type of loan rises. When the loans of banks are declining, as shown by a falling loan-deposit ratio, there is more money available for the purchase of commercial paper, and the rates fall. The commercial-paper curve thus bears the same relation to the stock market as the loan-deposit ratio curve. In both cases, when the *moving average falls*, stock prices are usually rising; when the *moving average rises*, stock prices are usually falling.

Several theories of the relationship between commercial-paper rates and stock prices have been advanced, prominent among which are those of the Harvard Economic Service and Colonel Leonard P. Ayres. The Harvard Economic Service a few years ago discovered that after correcting the figures for seasonal variations, a rise of $1\frac{1}{4}\%$ in the rate on commercial paper, when business activity was increasing, generally indicated a good time to sell stocks; a decline of $1\frac{1}{4}\%$ in the corrected figures, accompanied by declining business activity, usually marked a good period in which to buy stocks. Colonel Ayres advanced the proposition that when commercial-paper rates are above $4\frac{1}{2}\%$ —a long-term average rate—security prices are usually falling; below $4\frac{1}{2}\%$ commercial paper, stocks are usually rising. Both these theories seem to work out very well as barometers of the stock market.

MOVING AVERAGE AS A FORECASTER

A twelve-month *moving average* of commercial-paper rates, taken to represent the figure for the twelfth month, bears an interesting relationship to stock prices. Because of the fact that the *moving average* is so constructed that it usually moves at a later date than the actual figures, it appears that stocks would usually have been a good buy when the *moving average* of 60-90-day commercial paper began to decline. The most advantageous point at which to sell stocks was not so easily determined, but after some experimentation, it seemed that on the whole it would have been best to sell stocks after the *moving average* had risen 6% from a low point. That is to say, if at the low point the *moving average* of commercial-paper rates had been 3%, when the *moving average* had risen to 3.18% it would have been a good time to sell stocks; if the low point had been 5%, it would have been wise to sell stocks when the *moving average* had risen to 5.30%.

When the *moving average* of commercial-paper rates indicated a rising stock market, according to the above interpretation, the Dow Jones stock averages are shown in black; when a falling stock market was indicated, the averages are shown by a light line. By following this line across the chart, it is obvious that in spite of several exceptions caused by the erratic fluctuations of rates during the early part of the period, this barometer would have served as a remarkably accurate guide.

PREJUDICE AGAINST STOCK EXCHANGE LOANS

There are other kinds of short-term loans which banks consider after the credit needs of business patrons have been accommodated. When they find no other immediate need for their surplus funds, banks lend money against

stock and bond collateral. Although stock brokers need money to finance current operations just as other business men do, the prejudice against stock market operations has been strong enough to make this form of loan the medium of last resort when the bank has surplus funds. And Stock Exchange loans are called in great volume when business demands additional funds.

When the stock market is high, brokers need more money to transact business. But stock prices rise and fall with business activity; so that when the stock market is high, business is also active, and funds will be withdrawn from the market just when they are most needed. Because of this lack of sympathy between demand and supply of funds for Stock Exchange purposes, interest rates on brokers' loans fluctuate widely.

FEDERAL RESERVE AN INDIRECT AID TO BROKERS' LOANS

The width of fluctuations of call-money rates has been considerably reduced since the establishment of the Federal Reserve System. While the new banking laws still do not provide any means whereby member banks may rediscount notes of stock brokers directly at the Reserve Banks, member banks may rediscount the notes of their business customers and then turn around and lend the funds thus obtained to stock brokers. Rates on brokers' loans are therefore indirectly affected by the employment of facilities offered by the Reserve Banks. If the Reserve Banking laws provided for the direct rediscounting of brokers' loans, as is done by the Bank of England, fluctuations in call rates would probably be even smaller and would resemble commercial-paper rates.

Notwithstanding this discrimination against call loans, fluctuations in rates have been reduced to about one-quarter their former magnitude. Whereas rates mounted at times as high as 125% before the establishment of

Federal Reserve Banks, rates since have not risen higher than 30%, even during the most critical years, 1920 and 1921.

LIQUIDITY OF STOCK EXCHANGE LOANS

Thus, our law-makers have been slow to recognize the important part that the liquid feature of brokers' loans plays in the financial system. The banker, however, is forced to a realization of the value of liquid loans, for only through call loans is he able to lend sums of great size which are callable upon demand. Several billions of dollars are constantly being loaned against Stock Exchange collateral. Approximately 40% of this money comes from New York banks, and about an equal proportion from banks outside New York City. The remaining 20% is loaned by large financial corporations, such as insurance and business corporations, or railroads with large cash reserves which they wish to employ profitably in a liquid loan. Call loans are infinitely more important to the banking structure of the country than is popularly supposed. By means of them, banks and other large lenders can find instant employment for almost unlimited amounts of surplus money. And the most important feature of such loans is that they may be retired at any time the lender needs the money.

COLLATERAL REQUIRED AGAINST BROKERS' LOANS

Call loans are famous for their safety. A generous margin is demanded between the market value of the collateral and the amount of the loan. Collateral for brokers' loans usually consists of stocks and bonds being held by brokers on margin for customers, or securities owned by the brokers. Such collateral usually has a ready market and may be sold immediately if it appears that the loan cannot be paid.

Requirements for stock and bond collateral against brokers' loans vary with the condition of the security markets. Lenders as a rule are generally satisfied with "mixed collateral," that is, securities of both industrials and railroads as against "all industrial" securities. Occasionally loans are made against "all rail" collateral, bankers favoring these over "all industrial" because the market for railroad securities has been more steady over a number of years, and it is easier to realize upon the collateral should occasion demand. Whatever the collateral, bankers make a practice of studying the market carefully when making loans. They will often refuse to lend against stocks which have had sensational rises.

There are two types of brokers' loans: call loans and time loans. Call-loan rates depend upon the day-to-day supply of money available to brokers; and time-loan rates, since time loans are not callable upon notice, depend upon the more stable factors affecting the demand and supply of Stock Exchange funds over a period of time. The amount of money loaned on call fluctuates much more widely than money loaned on time. In an active market the amount of call loans outstanding will increase rapidly, because this type of loan is employed in day-to-day speculation. As a result, sometimes there are 50% more call loans outstanding than time loans, while at other times there may be 100% more, depending on the activity of the stock market.

TIME LOANS

A broker negotiates a time loan only when he can estimate his credit needs for a considerable time ahead. Time loans are usually made for 60 or 90 days or for four to six months, although they are sometimes made for periods of nine months or a year. This type of loan is never made in the money market on the floor of the

Exchange, but is transacted between the broker and a bank or between the broker and a money broker who represents a bank or other lender. Time loans usually are made under a contract which covers the full details of the loan and which is not subject to revision. The borrower must give the lender a note, and the collateral to be deposited is specified in detail. Interest rates on time loans fluctuate less sensitively than rates on call loans, and more sensitively than commercial-paper rates. Since both call-loan rates and commercial-paper rates are considered here in detail, a close examination of time-money rates will not be undertaken. The other two types of loans will better serve the purpose.

EFFECT OF CALL RATES OFTEN EXAGGERATED

Call loans are most spectacular in their movements. Since the call-money market is the last resort when banks feel the pressure of surplus funds, and the first to feel a drain when the demand for credit increases, call-money rates reflect most sensitively the changes in business and stock market conditions. From a stock market point of view, however, the prominence which is given fluctuations in call-loan rates by newspapers seems to exaggerate the value of those data. Fluctuations in call-loan rates often signify a change in general banking conditions, which will sooner or later affect the stock market; but often, too, fluctuations occur merely because of the peculiar methods used by the New York banks in granting and recalling funds from the call-money market.

OLD METHOD OF NEGOTIATING CALL LOANS

Before the war, call loans were negotiated at a "money post" on the floor of the New York Stock Exchange. A regular crowd of Stock Exchange members specialized

in buying and selling call loans at that post in much the same fashion as stocks are bought and sold at their different posts. Banks or other lenders would notify a Stock Exchange member of the amount they wished to lend. The broker would place the loan at the money post and communicate the name of the borrower to the lender. Lender and borrower would then come together to negotiate the loan.

If the loan was called before the broker's needs were satisfied, it was necessary for him to arrange another loan at the money post. Before the first lender would release the collateral which had been placed with him as security, it would be necessary for the broker to present a certified check as payment for the first loan.

The terms of a call loan require that the rate of interest be revised each day. When loans were carried over from one day to another without being terminated by either lender or borrower, it was customary to use the "renewal rate." The renewal rate was the average rate at which the first few million dollars of new call loans were placed at the money post just after the Stock Exchange opened each day. Unless either borrower or lender expressed dissatisfaction, this new rate was accepted as the interest rate for the day.

CHANGES IN CALL-MONEY MARKET

It was necessary to change the call-money market procedure somewhat during the war, because the extreme scarcity of funds necessitated the "rationing" of credit to both brokers and business men. At the same time, the government had some extremely difficult financing to do, which would have been greatly hindered by high call-money rates. A "Money Committee" was therefore organized to deal with the situation. The committee investigated both the credit needs of the Stock Exchange

and the resources of New York banks. Each bank was held responsible for a certain amount of call loans, so that stock brokers were assured reasonable amounts of credit when needed. A "money desk," at which the clerical work involved in the handling of call loans was done, replaced the money post on the floor of the Stock Exchange.

The system in use at the present time has not been changed radically from the methods used during the war. Today there are clerks at the money desk who keep records of the demand and supply of call money. These clerks introduce lenders and borrowers and attend to the details of the loans. The current call rate, or the rate of interest charged on the most recent loan negotiated, is posted at the money desk. The rate fluctuates erratically, sometimes changing several times in the course of a day.

It is necessary, as under the old system, to set a rate at which loans not terminated may be renewed each day—a rather important item, since approximately 95% of all call loans outstanding are renewed daily. The renewal rate under the new system is decided shortly before eleven o'clock each morning by the Stock Clearing Corporation, except on Saturday, when the renewal rate fixed on Friday holds good for over the week-end. This organization has complete records of all loans negotiated, by means of which they are able to determine a fair renewal rate. In addition, the opinions of large lenders and borrowers are solicited, a combination of opinions which has proved very helpful.

CALL RATES FORECAST COMMERCIAL-PAPER RATES

Call-money rates since 1890 are shown in Chart 45 with the Dow Jones averages. There are such sharp seasonal variations in call rates that it is necessary to

CALL LOAN RATES AND STOCK PRICES

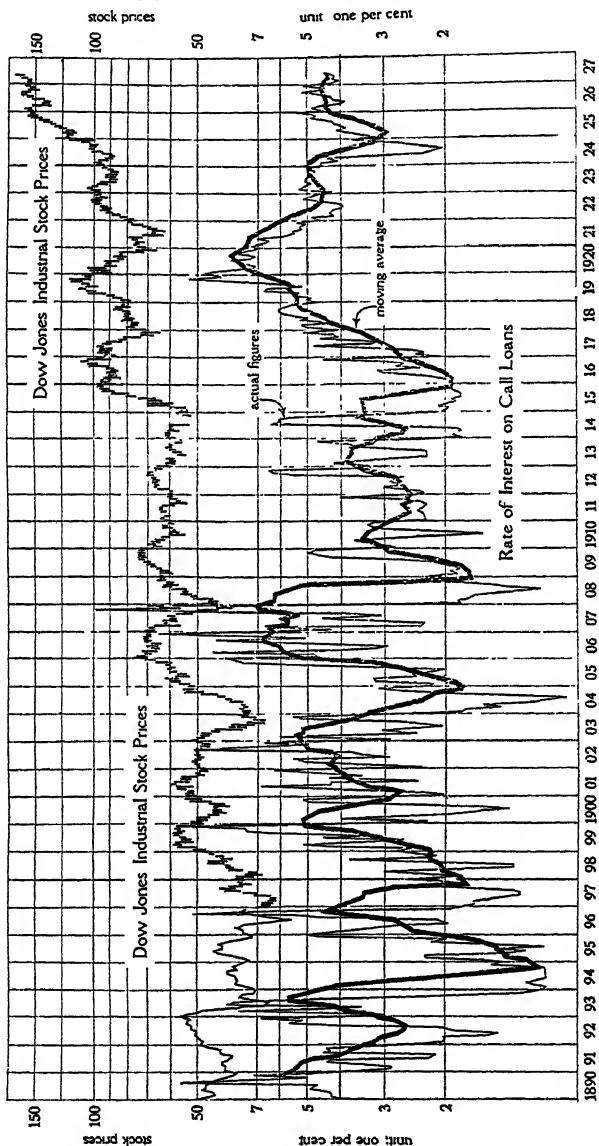


CHART 45

correct them for seasonal variations. If the *moving average* of call money is compared with that of commercial-paper rates, it will be evident that the trend of call rates generally changes several months before commercial-paper rates do. This is a very useful situation, since it has already been seen that commercial-paper rates are closely allied to stock market trends. Here, in the *moving averages* for call loans, is a barometer which can forecast changes in commercial-paper rates.

Forecasting the changes in commercial-paper rates, however, seems to be the principal value of call money. Call rates are erratic in their fluctuations and do not seem to be directly linked up with stock trends. But the *moving average* of call money is a useful precursor of changing commercial-paper trends, and in this way is indicative of the future levels of stock prices.

CHAPTER XVII

Bond Yields

IT was not until centuries after business had been giving and receiving interest on loans that the practice was accepted by governments as a necessary institution. The principal reason for this delayed approval was probably the fact that the practice of usury, as interest was called, was greatly abused. Loans were made for the most part to private individuals in immediate need of funds. Borrowers were usually timid, ignorant, and anxious for privacy, and were willing to pay any amount of interest. As a result, professional lenders demanded extortionate rates, and interest was prohibited by law.

Money lending could not be thus easily abolished, however, and gradually gained in public favor, for the borrowing of funds became increasingly necessary as business methods grew more complex. Interest first originated in Babylon, one of the earliest civilizations. Later on in the history of civilization, a Hindustan father would pledge all his worldly goods in order to have his daughter married in state. The Phoenicians exhibited a shrewd sense of the business possibilities of money, using loans to finance ships. In Greece, with its rapidly developing civilization, interest rates soared to great heights. The Romans at first opposed the taking of interest, but it was in Rome later that money lending first enjoyed the sanction of law, although subject to strict regulation.

GOVERNMENTS FORCED TO BORROW AT INTEREST

Finally the point was reached when governments themselves found it necessary to borrow money at interest.

At first governments had been supported by taxes from their subjects and by the spoils of war. Plunder followed conquest, and victorious warriors were able to return with booty of great value, which allowed their governments to rule with a lavishness unapproached in modern times.

Worth-while war prizes grew scarce, however, as time went on. Governments were forced to levy more severe taxes upon the people. Nor did the rapid increase in the costs of running a government lighten the burdens of the exchequer. Rather than incur the indignation of their people by levying direct taxes, governments resorted to vending justice in the open market, levying arbitrary fines, imposing arbitrary taxes, controlling commerce, creating corporations and monopolies at will, seizing the treasure of monasteries and churches, demanding loans from certain individuals, pawning the jewels of the crown, and other similar methods of obtaining revenue.

The need for funds was especially urgent in times of war. A military campaign no longer yielded booty enough to pay even the expenses of the campaign, and governments had to turn to borrowing at interest.

THE FIRST GOVERNMENT LOAN

The Venetians were the first to create a national debt as a solution for government financial problems. Prominent citizens were called upon to lend money to the government. They were made creditors of the government and were paid 4% interest on the money borrowed. Venice was in this manner able to increase her credit standing and political power tremendously.

Other countries soon realized the advantages of negotiating loans of this sort. When the Florentine Republic experienced a deficiency, it borrowed money at 5%. The

Dutch, under the direction of the Spanish Jews, established a national debt which permitted an expansion of commerce and a colonial development which made Holland the envy of the rest of the world.

ENGLAND ESTABLISHES A PERMANENT DEBT

When a Hollander was called to sit upon the English throne, he brought with him the device which had produced such remarkable results in his native land. England first adopted the policy of acquiring an interest-bearing permanent government debt by issuing negotiable bonds. The English found a market for these new securities in a rapidly increasing middle class of traders and merchants, whose resources were beginning to exceed their expenditures and who were seeking a profitable form of investment for their surplus funds. These government loans were so very popular with the new investors that they furnished money far in excess of any previous method of government financing.

Governments had at last discovered a class of investors who could furnish enormous sums for the execution of government projects, investors who preferred long-term loans to short-term loans. In fact, the investors were so desirous for long-term loans that the French and English governments issued bonds without maturity dates, debts which never become due. To safeguard these investors the tenet was established which is the only basis upon which governments, or for that matter any other borrower, can continue to sell bonds today: "That under every form and phase of circumstance, in the darkest hour of gloom as in the proudest moment of grandeur, the inviolable faith of the borrower must be preserved for the public creditor."

INDUSTRY ALSO TURNS TO INVESTING PUBLIC

It was not long after the discovery by governments of this means of raising money that the Industrial Revolution began with the inventions of the spinning jenny, steam engine, cotton gin, steamboat, and the railway locomotive. The rapid industrial progress of those times required immense sums of money. It was impossible for one individual to furnish sufficient funds to construct a railroad. Private industry under the tutorship of governments, at this point began to regard the investor as a logical source of capital.

The problem of financing a business enterprise was quite different from that of financing a government, however. A government is not run for profit, but to protect the governed. Its only source of income is the taxes collected from the people. There are no profits derived from running a government which can be shared with the investor. Thus a government can issue bonds only in return for loans.

BUSINESS CONCERNS FIRST SOLD COMMON STOCK

A private business enterprise, however, is run for profit. Before the advent of the factory system, a man had owned his shop, had furnished the capital with which to run it, and the entire profits were his. The development of large-scale production had meant factories, great numbers of workers, and a correspondingly large amount of capital. It was usually beyond the resources of a single individual to finance a factory of any great size. In order to obtain sufficient money, it was necessary for a number of people to combine their savings into one large sum. However, these larger concerns were run for profit just as the smaller ones had been. It was logical, therefore, for all those who had invested in the business to

receive a share of the profits. Whereas governments were limited to the sale of interest-bearing bonds, because they could not offer the incentive of profit sharing, the first business concerns were able to sell common stocks whereby each investor was entitled to a share of the profits.

CERTAIN INVESTORS WANTED BONDS

Industrial concerns soon found that they, too, could sell bonds to advantage. Governments had so educated people that many preferred this type of security with its definite, guaranteed income to common stocks. Investors seemed especially to prefer mortgage bonds, if the properties of a company were located at some distance away. They were willing to become owners in companies which were near at hand and which they could watch more carefully; but they would rather become creditors of companies which they knew less about. As long as some investors were assured that their bonds were well secured, they were often well satisfied to leave the fortunes of unfamiliar companies to others.

The Industrial Revolution has made it possible for an increasingly large proportion of workers to produce more wealth than they can consume. The surplus is either deposited in savings banks or trust companies, who in turn invest it in stocks and bonds, or it is invested in securities directly. During the past few centuries the increase in the amount of capital available for investment has been tremendous, because as the efficiency of the industrial system increased, the earning capacity of the individual has also increased. On the other hand, the demand for funds has also increased, since the development of each new invention required additional investors' capital.

DEMAND FOR CAPITAL VARIES WIDELY

The demand for capital is more variable than the supply, since during periods of depression new projects will rarely be undertaken and all expansion will be cut to a minimum, whereas the savings of investors are not cut so abruptly or to such extremes. Since the demand for capital is never in exact accord with its supply, but is constantly varying one way or the other, it follows that the price paid for capital, the interest rate, will vary also.

The practice of saving and investing by large groups of people was originated about the same time that industry was undergoing a complete reorganization. At this time, business first showed a tendency to prosper and decline in rather definite cycles. It was natural, therefore, that many of the innumerable theories which tried to explain the business cycle, accredited the cyclical movement in business to the new system of financing enterprises. Further study has convinced modern economists that business cycles are caused by many influences other than these variations in the demand and supply of investment funds.

THE BONDHOLDER'S CHIEF INTERESTS

The investor today must decide whether he will be a part owner or a creditor of a concern, whether he will purchase stocks or bonds. If he buys stocks, his fortunes will vary directly with the fortunes of the business. If he owns bonds, his fortunes are only indirectly affected by conditions within the business. His only concern in that case will be to make sure that the financial standing of the business is sound enough to insure the payment of interest on his bonds, and the final repayment when the bonds fall due.

The bondholder's fortunes are affected by influences

outside the scope of the individual companies' activities, however. His investment and his return are a fixed number of dollars. If the value of the dollar rises or falls, the bondholder will make or lose money; a falling cost of living will benefit the bondholder, while a rising cost of living will mean a loss to him.

Occasionally it is possible to predict the future trend of commodity prices. It was not difficult, for example, for economists to forecast a rising cost of living when the discoveries of gold in California and Australia flooded the world with gold after 1850. The rise was much less than expected, however, and the downward trend which became apparent after 1873 was a distinct surprise to most economists. After 1900 authorities were correct in predicting a rising cost of living, but ten years later opinions again began to vary. Since then the future trend of prices has been difficult to predict. If professional economists are thus balked by the conditions affecting price levels, how much less accurate will be the guesses of the average investor!

INCLINED TO ACCEPT CURRENT RATES

Yet the trend of the cost of living is of primary importance to every bondholder, not only because a change will affect the purchasing power of his investment, but also because the trend of commodity prices has a pronounced effect in raising or lowering the prices of long-term bonds. The fact that interest rates are low when living costs are low, and high when living costs are high, has led many to believe that when commodity prices rose, bond investors demanded more interest to compensate for the loss in purchasing power of their principal; when commodity prices dropped, investors were content with a smaller return because their purchasing power was increasing. Changes in interest rates can hardly be

attributed to such changes in the frame of mind of the investor, for it is well known in investment circles that investors will accept the current interest rates without a great deal of questioning.

It is likely that changes in interest rates are due more to fluctuations in the demand for funds than to changes in supply of funds. For when commodity prices rise, it is necessary for borrowers to obtain larger sums of money to finance current operations and expansions; when prices fall, less money is needed. The increased demand for funds when prices are high, raises the interest rates on borrowed money; the smaller demand when prices have fallen, leads to smaller demand for investment funds and lower interest rates. Thus, instead of investors demanding higher yields in their money to compensate for the increased cost of living, it seems that higher interest rates result from the increased demand for funds which arise because of the higher costs of doing business. This increase is not paralleled by a corresponding increase in the supply of investment funds. The reverse of this situation occurs when the cost of living falls.

BOND YIELDS FLUCTUATE WIDELY

The yields on four different classes of high-grade bonds as computed by the Standard Statistics Company are shown in Chart 46. Municipal bonds have long enjoyed a preferred position with investors, high-grade railroad bonds have carried a slightly higher yield, while industrial and public utility bonds show the highest yields.

Bond yields are of course the reverse of bond prices. If a long-term bond paying interest of \$5 is bought for \$100, the yield is of course 5%. If the same bond can be purchased for \$50, the yield will be 10%—ignoring the maturity date factor. Thus the yield on bonds fluctuates inversely with the price.

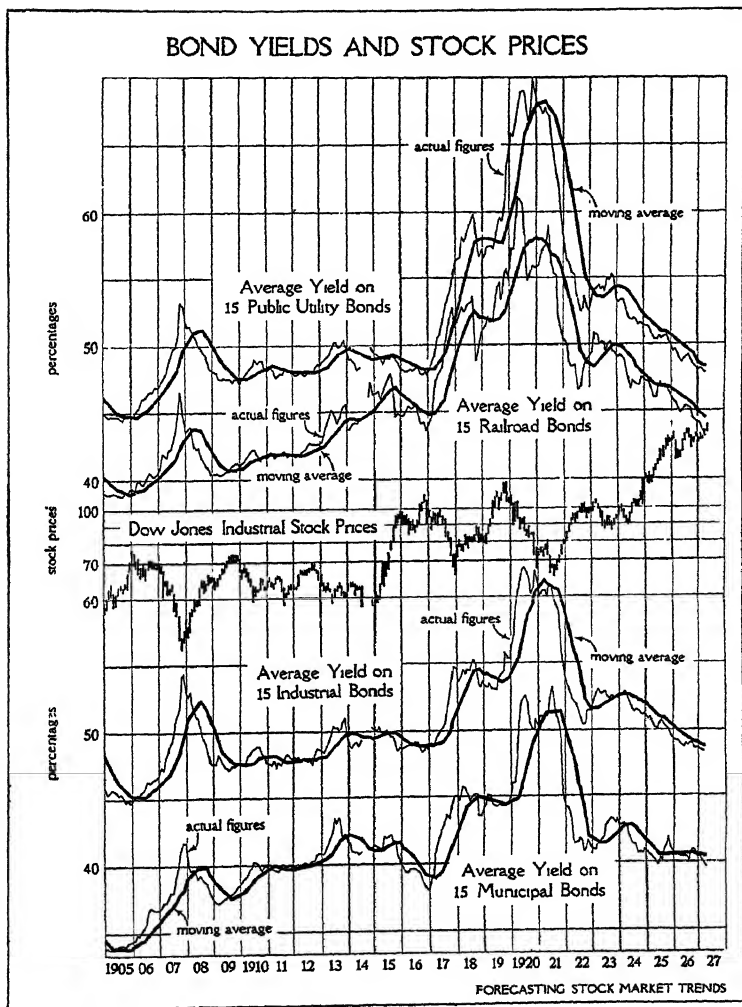


CHART 46

The yields of each group show fluctuations which correspond to the movements of general business; although at certain times, as in 1907, and again from 1917 to 1920, these cyclical variations are much more pronounced than

at other times. In 1907 the wide fluctuations were due chiefly to the financial panic of that year, which naturally raised the prices of all investment capital far above usual levels. In the years from 1917 to 1920, however, the sharp rise in bond yields was due to two influences: first, the general level of commodity prices was inflated by war-time conditions and, second, the government, through its enormous bond issues, had drained the country's resources of investment capital. The sharp decline in prices during 1920 and 1921, as well as the fact that the government no longer needed enormous sums of money, caused a decline in bond yields which is reflected in each of the four groups shown on Chart 46.

The chart shows that the trend of yields on the different classes has not been the same. Public utility bonds, which in 1905 were selling to yield less than 4.5%, yielded almost 7% in 1920, an increase of over 56%. Railroad bonds also increased over 56%, yielding 3.9% in 1905 and 6.11% in 1920. Municipal bond yields rose to 5.2%, from 3.4%, an increase of 53%. Industrial bonds, however, increased only 38%—from 4.5% to 6.2%. The apparent inconsistency of industrial bonds is important.

COMMODITY PRICE CHANGES AFFECT BONDS DIFFERENTLY

The general decline of bond yields and the rise of bond prices during the years from 1905 to 1920 were due to the rising cost of living, which increased the demand for investment funds because of the increased expense of conducting business. Advancing commodity prices tend to raise the yields on all kinds of bonds.

Industries themselves, however, are diversely affected by rising commodity prices. Whereas industrial concerns are free to raise the prices of their products to keep pace with the increase in the cost of doing business, both

railroads and public utilities are restricted by public rate-making commissions to such an extent that it is often impossible for them to keep pace with operating expenses. The profits of rails and public utilities will naturally fall during periods of rising prices, and the risk involved in holding their bonds will therefore increase. Industrial concerns, on the other hand, are able to make the same profit or actually increase profits during such a period, and their bonds will enjoy relatively a better position in the bond market than those of railroads and public utilities.

The common stocks of rails and public utilities are also affected by rising commodity prices. Stock equities of both rails and utilities suffered greatly from 1905 to 1920, when commodity prices rose rapidly; since then they have shown sharp upward trends as commodity prices declined. Investors in railroad or utility securities cannot afford to ignore the influence of the trend of commodity prices upon their companies.

INCREASE IN YIELD ON MUNICIPALS

Although municipal bond yields increased between the years 1905 and 1920 almost as much as either rails or public utilities, most of that rise took place before 1910. Since then, the trend has been similar to industrial bond yields. The trend of municipals is probably explained by the fact that local governments borrowed heavily during those earlier years. This not only increased the supply of such securities in the market, but the ease with which local governments obtained loans often led to unwise credit extension to certain municipalities. Investors apparently arrived at the conclusion after 1910, that the risk on municipal securities was greater than was generally supposed.

In studying the commercial bank, it was found that

short-term interest rates were most significant. The interests of the investment banker, who deals in stocks and bonds, are concerned especially with long-term interest rates. The relation between short-term and long-term credit is a close one, however, because when business is prospering there is a demand for both long and short-term loans; when business is poor, the demand for both declines. Both types of loans are directly dependent upon the savings of the general public, which increase and decrease with business conditions.

Interest rates on 60 to 90-day commercial paper fluctuate similarly with bond yields, although the fluctuations of the former are more pronounced. Long-term bond yields move a few months later than the yields on short-term notes, a characteristic which makes them less useful in stock-market forecasting.

BOND PRICES USUALLY FALL BEFORE STOCK PRICES

Since there are no sharp fluctuations in bond yields, it is not necessary to use a moving average. The actual figures of yields on all four groups of bonds generally begin to rise some months *before* stocks begin a major decline. This means then, since bond yields are bond prices reversed, that the market prices of high-grade bonds, such as are included in these four groups, will begin to fall shortly before a bear market in stock begins. Thus, the data corroborate the generally accepted theory that the bond market precedes the stock market.

The facts, however, do not confirm the theory at the other extreme. It is also generally believed that during a period of business depression, high-grade bond prices commence to rise before the general stock market, "because there is less doubt concerning the security of interest and principal invested in high-grade bonds than in stocks." The data take exception to this theory by indicating

that the general stock market begins an upward swing at the same time that high-grade bond prices rise. The chart proves that, as a rule, when bond yields have fallen in the past—when bond prices have been rising—the stock market has also risen concurrently; when bond yields have begun to rise—bond prices fall—a decline in stock prices has usually followed a few months later.

PRECAUTIONS IN BUYING BONDS

These data showing bond yields for a period of more than twenty years indicate the most advantageous times at which to invest in bonds. Changes in commodity prices, financial panics, and wars will make a material difference to the bond investor; but they are very difficult to forecast. If the investor has good reason to believe that commodity prices will rise over a period of years, or if a war or other cause indicates that a period of price inflation is ahead, he will do well to withhold his funds from long-term bond investment, for, if the predictions come true, the prices of those securities will surely fall.

It is also important for the bond investor to know in which phase of the business cycle an investment is made. If he invests when business conditions are dull, bond yields will be high; if business is prosperous, bond yields will be low. Bonds which yield 5% on his investment when business conditions are dull may yield 4.5% or less when business is prosperous.

One theory of investment contends that the investor, in order to take full advantage of the cyclical swings of business, should invest in high-grade, long-term bonds during periods of prosperous business and withdraw his funds during business depressions to reinvest them in common stocks. This contention is based upon the belief that bond returns increase as business conditions decline, while stock prices rise as business conditions

improve. If this plan worked out, the investor could always keep his capital invested in securities which were rising in price, and in this way he would be continually adding to his capital. The true situation, however, is made obvious by charting bond yields with stock prices. The statistics do not support this plan of investment, for stock and bond prices tend to rise and fall together.

ADVANTAGE OF INVESTING IN SHORT-TERM SECURITIES

It is often wise to invest in short-term notes or bonds when the stock market is high, since the nearness of their maturing date prevents the price of these securities from declining very far. For instance, when a bond, due in fifty years, paying 5% interest, sells to yield 5%, the price is \$100; but when it sells to yield 10.074%, the price has declined to \$50. Now, if the same bond were due in a year, when yielding 5% it would sell at \$100, and it could not possibly fluctuate very far from this level, provided, of course, that there was no doubt regarding the payment of the principal when the bond fell due. Therefore, while it does not seem wise for an investor to shift his capital from common stocks to long-term bonds when he thinks the stock market is too high, it is safe for him to invest in short-term notes or bonds at such times.

VOLUME OF NEW SECURITIES ISSUED

The volume of new securities issued is closely related to stock prices. These monthly figures have been computed since 1907 by the "New York Journal of Commerce." Both stocks and bonds are included in this index, which is based as far as possible upon the prices at which the securities are offered to the investor. The "Journal of Commerce" does not attempt to record every new issue, but merely enough to indicate month-to-month variations in the amount of securities issued.

The actual figures are extremely erratic. They have been corrected by a *moving average* shown in Chart 47. With the fact in mind that a moving average, centered on the twelfth month as this one is, will ordinarily move about five months later than the *actual figures*, it will be evident from the chart that the volume of new securities

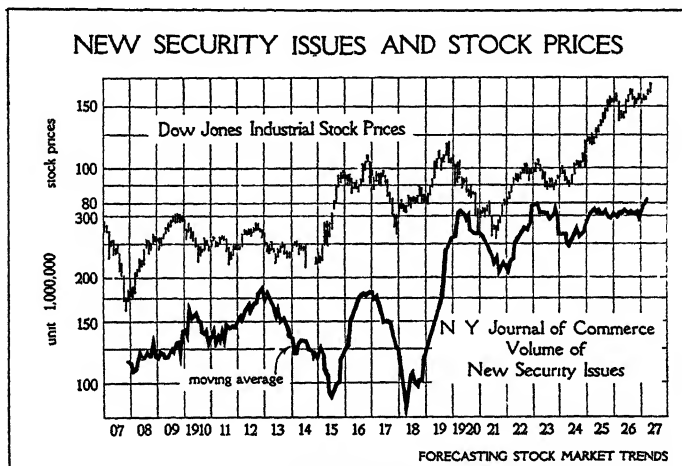


CHART 47

issued follows the trend of the stock market closely, rising sharply when stock prices are high, falling sharply when stocks are low.

Data showing new stock and bond issues monthly, classified in many different ways, are being compiled at present by both the "Journal of Commerce" and the "Commercial and Financial Chronicle." Although the data are not yet available over a long enough period of time to be of any great value, it is possible that in the future some interesting relationships will be observed between the proportion of stocks issued in relation to bonds when business optimism is at its height in a period of prosperity, and the relation between the two when business is depressed and investors are more cautious.

CHAPTER XVIII

Stock Averages and Indexes

THE origin of stock markets can be traced back to the beginnings of colonial development by European nations. At that time the question of how best to regulate trade between colonies and the mother country was a serious problem confronting the empire-building European governments. At first, home merchants were allowed to trade with the colonies without restriction, but it soon became apparent that a few traders could prejudice an entire colony against the mother country by their unscrupulous dealings.

In order to safeguard the best interests of all engaged in foreign trade, "regulated" companies composed of all merchants engaged in colonial trade were formed. Upon paying a nominal fee a merchant was licensed to trade with a specified colony. He traded with his own capital and all profits belonged to him. Each member was subject to the rules of the company, and was thereby protected against any unprincipled dealings of one of his countrymen. Through these "regulated" companies the government was able to regulate trade and to insure to some extent the good will of its colonies.

PERMANENT CAPITAL NEEDED

The "regulated company" proved ineffectual in several respects, however. The individual members had no financial interest in the company itself beyond the payment of their initiation fee. They were primarily interested in their own immediate profits, with the result that in times of adversity, when capital was needed most, members would withdraw their capital and use it where

profit opportunities seemed brighter. Governments soon discovered that a closer form of organization was needed, and to attain this end a new type of company was formed which would have a permanent stock of capital. In this new company, capital was supplied by a large number of people and was left permanently in the enterprise. The management was put in the hands of the most capable traders, who ran the company for the best interests of all.

The "joint-stock company" obtained its capital by creating shares of stock which could be sold to anyone, whether or not he knew anything about the details of that particular business. While the new investor class seldom understood the details of the business, they were protected by being able to vote for company officials of their own choice. Despite a great deal of incompetence and corruption in these early companies, they attracted amounts of capital large enough to permit the extension of the governments' commercial interests to a much further degree than ever before, an accomplishment which materially aided the execution of a definite foreign policy. In the United States, Virginia was founded by a joint-stock company; Massachusetts was developed by one.

ORIGIN OF THE FIRST STOCK MARKET

When first organized, the joint-stock companies imposed strict limitations upon their investors. The "English Company of Adventurers," for instance, required the consent of a majority of members before any rights to share in the enterprise could be transferred. It soon became evident, therefore, that if the company's rules were changed so that the shares could be transferred at will, it would be much easier to obtain capital from investors. When this was accomplished, a market was created where stock-jobbers might deal freely in the new transferable shares. In this forerunner of the modern

stock market, current prices were quoted, and the opportunity for speculation in stocks revealed itself for the first time.

The number of stocks whose prices were currently quoted increased with the growth of industry. The first stocks were those of colonial development companies, but soon other joint-stock companies were formed. In 1719, Law's Louisiana Company was formed in France, with the purpose of providing financial aid to the French government. Millions of notes, represented by a varied enough list of securities to supply a modern stock board, were issued against the company's entire holdings in the Mississippi Valley. The speculative mania which followed the formation of this company caused the first bull market in stocks. The prices of securities in the Louisiana Company skyrocketed until the bubble burst.

When the Mississippi Company was first organized, its apparent success led to the organization of the South Sea Company in England, whose purpose, similar to that of Law's company, was to redeem the government debt. The English were eager to invest, and the mania of speculation did not confine itself to the stock of the South Sea Company, but spread to all available forms of securities. As a result, many new companies were incorporated, whose stocks greatly added to the number of securities available for speculative trading.

A MEASURING STICK NEEDED

During the two centuries since the first stock market was originated, the number of stocks quoted in the open market has increased with each new commercial enterprise. The business of stock speculation received its most powerful impetus, however, from the Industrial Revolution, which created thousands of new companies requiring far more capital than had ever before been needed. With

the Industrial Revolution, too, recurrent periods of business prosperity and depression first became evident; and since the prices of stocks were vitally affected by these changing business conditions, investors and speculators soon found that bull and bear markets deserved careful study.

The rapid increase in the number of stocks in the market soon made it impossible to follow the movements of each individual stock, and often the diverse fluctuations of different stocks would obscure the general trend of the market. In order to get a clear picture of the entire market, Dow, Jones & Company in 1884 first computed an "average" price of a number of stocks. By averaging each day the prices of several representative stocks, it was possible to see clearly what the general market was doing.

As time went on and a number of revisions were made in the stocks used in the "averages," it became evident that Dow Jones had discovered a very useful device, and many other averages were started as well as more elaborate indexes calculated to measure different phases of stock prices. Since foregoing chapters have been devoted to a study of stock market trends, it is essential now to examine the various devices which may be used to measure these trends. Perhaps this can most easily be done by comparing commodity prices, with which everyone is more or less familiar, with stock prices.

DIFFERENCES BETWEEN STOCKS AND COMMODITIES

Professor W. C. Mitchell points out that business enterprises are more like men than like commodities. Whereas commodities are produced, consumed, and produced again, business enterprises have a continuous life, during which it is possible for them to undergo great changes. Thus, while the price of a commodity represents

the cost of a definite, unchangeable article, the price of a stock represents the cost of a share in a business which is essentially a variable unit. The company's physical property, security holdings, indebtedness, leases, expenses, earnings, financial affiliations, relations to governmental regulating commissions, and hundreds of other integral parts of the business are at all times subject to changes, which naturally affect the value of its securities.

Stocks are "variable fractions of variable wholes"; and fluctuations in the price of a stock are due to changes within a company, an industry, and in the condition of general business. Thus it is said that, when comparing pig-iron prices in 1900 with pig-iron prices in 1920, one is dealing with like things; but when one compares the stock of a company in 1900 with the same share of stock in 1920, it is like comparing the price of pig iron in 1900 with the price of automobiles in 1920.

Stocks enjoy many advantages over commodities from the standpoint of measuring price fluctuations, however. The stock market is more highly organized and centralized than the commodity markets. Since the things quoted are uniform, quotations always apply to identical units. In addition, the prices of a larger number of stocks, in proportion to the total number in existence, are quoted than is possible when dealing with commodities.

NEED FOR MORE STOCK AVERAGES

As time went on, the utility of the Dow Jones averages was more widely recognized. And as the rhythmical movement of stock prices was made evident by the fluctuations of the averages, they were often attributed with virtues which they did not possess. Some investors mistakenly reasoned that, since the "average stock" had risen from, perhaps, 50 to 75, the value of all stocks had increased 50%. As a result of many statistical misinter-

pretations, the averages were often wrongfully blamed for distorting the facts.

Because the Dow Jones averages were the only available ones, they were used for many other purposes than the ones for which they were originally intended. They were used for every imaginable purpose, from investigating a claim that government regulation had caused losses to investors, to judging changes in the value of stocks held in a trust estate. It soon became evident that no single stockaverage could measure all phases of the situation, any more than one index of commodity prices can show retail prices, wholesale prices, the cost of living, and the cost of building construction all at the same time. The necessity of computing different averages to show special phases of stock prices led to the construction of many new indexes, each of which would show some one side of the market more clearly than the others.

NECESSARY TO COMPUTE TWO AVERAGES

The Dow Jones averages had been in use a number of years before the example was followed by others. They were first constructed in 1884 by averaging 12 representative stocks, 9 of which were rails. Soon, however, the tobacco, steel, sugar, and oil trusts originating in the early 90's so increased the number of industrial stocks, that the predominance of rails in the New York market was threatened and a broader list of stocks was necessary in order to keep the average representative of the entire market. In June, 1896, two averages were compiled, one based upon 20 railroad stocks and another upon 12 industrials. In January, 1897, it was definitely decided to keep the two averages currently, and ever since that time they have been published daily.

From time to time it has been necessary to make substitutions in the stocks used, in order to make the averages

always representative of the entire market. In September, 1916, the number of stocks used in the industrial average was increased from 12 to 20, with 8 of the original 12 being retained. The new figures were calculated back to the reopening of the New York Stock Exchange on December 12, 1914.

REVISING THE DOW JONES INDUSTRIALS

Professor W. L. Crum pointed out in an article in "Barron's" on May 23, 1927, that the old average of 12 stocks used before July 30, 1914, is not comparable with the new average of 20 used since December 12, 1914. If the average prices of the new 20 industrials are computed for the period before the closing of the Exchange, when the old 12 were actually being used, he discovered the average price of the new 20 would generally be at 60, whereas the prices of the old list of 12 actually averaged 80. In other words, if one is to use the two averages together to estimate average stock price *levels*, it is advisable to allow for the fact that the new averages will run about 25% below the pre-war averages.

The Dow Jones figures, revised according to Professor Crum's suggestion, are shown on Chart 48. A great many of the barometers used in these articles gave "buy" signals just before the closing of the stock market in 1914. If the value of stocks had been measured by the Dow Jones figures as they have heretofore been shown, there would have been an apparent loss in value just as the war was declared, if stocks had actually been purchased. This correction of averages, however, shows that investors who had followed those "buy" signals would have found themselves, after what now proves to be but a slight reaction, to be "in" stocks at the beginning of one of the biggest bull markets in history.

The revision of averages also shows that common stock

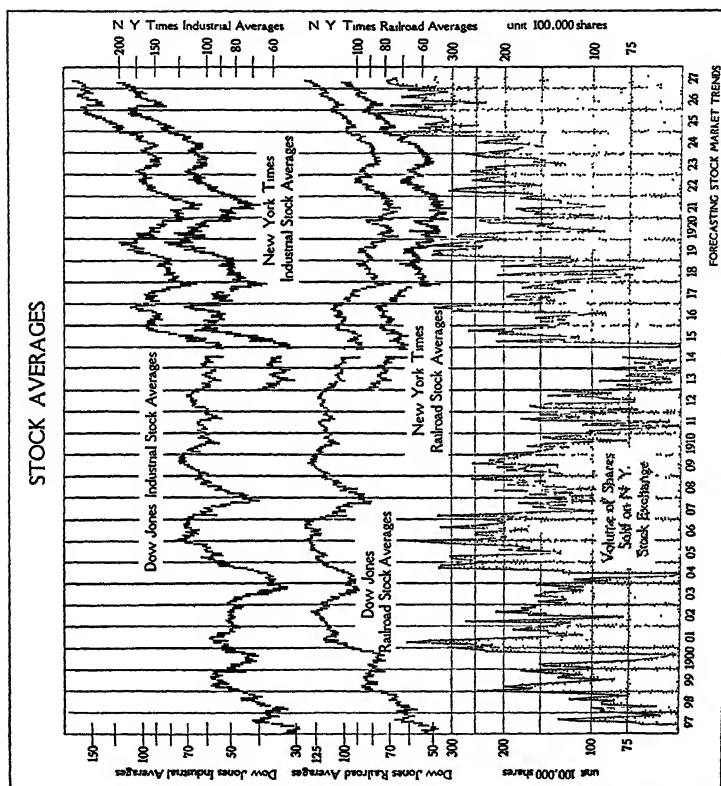


CHART 48

values have increased steadily from 1897 to the present time. This consistent rise is in accord with recent statistical studies which have proved that over a long period of time, disregarding the temporary bear markets, the holder of common stocks will witness a steady increase in the value of his stocks as the wealth of the country grows.

DOW JONES AVERAGES AGREE WITH OTHER INDEXES

Throughout these studies, the Dow Jones averages have been used to indicate both stock trends and the general level of the stock market. This seems to be justified when one considers that the averages agree very closely with more elaborately constructed indexes. For example, the Standard Statistics Company compiles an index of stock prices based upon 31 railroad and 199 industrial stocks. The similarity between this very comprehensive index and the Dow Jones averages is apparent when the two are compared. Since they show practically the same things, and in addition the Dow Jones figures are available for a much longer period of time and are published each day shortly after the stock market closes, their usefulness is more fully appreciated.

Probably the best known of the many averages patterned after Dow Jones are the ones compiled by the "New York Times." Two averages are compiled, one for the railroads and one for the industrials. The fact that five more stocks are included in each of the "Times" averages seems to make no appreciable difference, for they tell the same story as the Dow Jones figures, as Chart 48 clearly shows.

The number of shares of stock sold on the New York Stock Exchange each month since 1897 is also shown at the bottom of Chart 48. When stock prices are high, speculative interest is necessarily large and there is a

large volume of stock traded in. Conversely, low stock volumes usually accompany low stock prices. There is no exact relationship between volumes and prices, however; for often at the height of a bull market there will be several months of low stock volumes, and frequently near the bottom of a bear market the volumes of trading will be large.

THE "HERALD-TRIBUNE" AVERAGES

Another interesting average has recently been constructed by the New York "Herald-Tribune." Believing that 40 or 50 stocks was an insufficient number to represent the entire market accurately, the compilers of this index work with 100 stocks—70 industrials and 30 rails. The rails are divided into 20 dividend-paying and 10 non-dividend-paying stocks. The industrials are divided into the following groups:

Groups	Number of stocks
Manufacturing.....	15
Oil.....	10
Public utility.....	8
Steel.....	6
Copper.....	7
Equipment.....	4
Store.....	5
Motor.....	10
Food.....	5
	<hr/>
	70

Each day separate averages for the high, low, and closing prices of each of the nine groups of industrials and the two groups of rails are published. In addition, averages for the 70 industrials, the 20 rails, and the entire 100 stocks combined are published. Since these averages have only been available since January 1, 1923, their value has not yet been fully demonstrated.

THE MOST COMPREHENSIVE STOCK INDEX

In an attempt to produce an index which would show accurately the changes in value of all stocks outstanding, as well as changes in the total value of the stocks of different industries, the Standard Statistics Company undertook the compilation of the broadest index yet constructed. The methods of calculation differ from those used in constructing averages like those mentioned above.

In a stock average a change of from 50 to 55 is given no more significance than a change from 100 to 105, because both would represent an increase of five points, and when an average is taken they will each raise the average an equal amount. But in the first case there was an increase of 10%, as compared with the 5% increase in the latter. The Standard Statistics Company thought that this situation needed correction and so they have used "relatives" in computing their index. According to this device, when one stock has risen from 50 to 55, the relative is 110%; while another which has risen from 100 to 105 will have a relative of only 105%. The two relatives when averaged would thus show an increase of 7.5% for the two stocks. Under identical conditions the ordinary average would have indicated a rise from 75 ($50+100 \div 2 = 75$) to 80 ($55+105 \div 2 = 80$) or 6.66%. To meet this difficulty, the Standard Index makes allowances for differences in the price levels of the stocks used.

It might be pointed out here that the market partially takes into account the difference in selling prices between stocks, since there is a *tendency* for stocks to rise or fall proportionately. It is common knowledge among traders that a stock selling around 200 will ordinarily fluctuate much more widely than a stock selling at 100; so that in

averages like Dow Jones, the market itself has already taken into account the differences between selling prices.

Another objection to stock averages for certain uses was the fact that they would attach as much importance to companies having 100,000 shares outstanding as to companies having 1,000,000 shares outstanding.

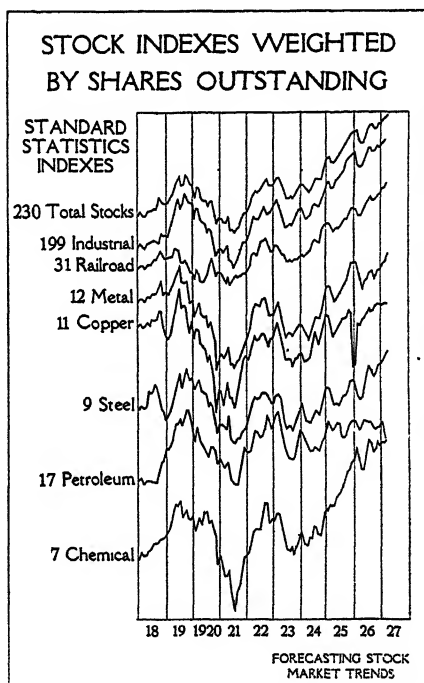


CHART 49

If there was an increase of \$10 in the price of both stocks, an average would not show that the total value of the first stock had increased \$10,000,000, while that of the second had increased only \$1,000,000. In order to emphasize the factor of size, the price of each stock was weighted in the Standard Index according to the amount of stock outstanding. In other words, in computing the

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index the price of each stock is multiplied by the number of stocks outstanding.

In using this index, it should be remembered that when stocks with an unusually large number of shares outstanding, like United States Steel, General Motors or American Telephone, rise or fall abruptly, they will affect their respective groups very noticeably.

The following table shows the weight given to each industry which is used in making up the final index:

Number of stocks used	Group	% of total weight
31	Railroad.....	29.50%
17	Petroleum.....	16.89
5	Telegraph and cable.....	6.71
9	Steel.....	6.59
11	Copper.....	5.64
10	Automobile.....	5.50
16	Traction, gas and power.....	3.72
18	Miscellaneous.....	3.15
3	Electric and equipment.....	2.80
7	Tobacco.....	2.40
9	Food.....	1.76
12	Metals.....	1.76
10	Railroad equipment.....	1.72
7	Tin and rubber.....	1.65
11	Chain store.....	1.62
7	Chemical.....	1.50
3	Mail order house.....	1.26
6	Sugar.....	1.16
3	Farm machinery.....	0.85
8	Auto accessory.....	0.85
5	Textile.....	0.76
5	Leather and shoe.....	0.56
3	Theater.....	0.44
5	Machine manufacturing.....	0.38
3	Shipping.....	0.36
3	Coal.....	0.27
3	Paper.....	0.20
<hr/>		<hr/>
230		100.00%
199	Industrial.....	70.50%

The groups in the above table have evidently been weighted according to the amount of stock from each industry listed on the Stock Exchange. According to

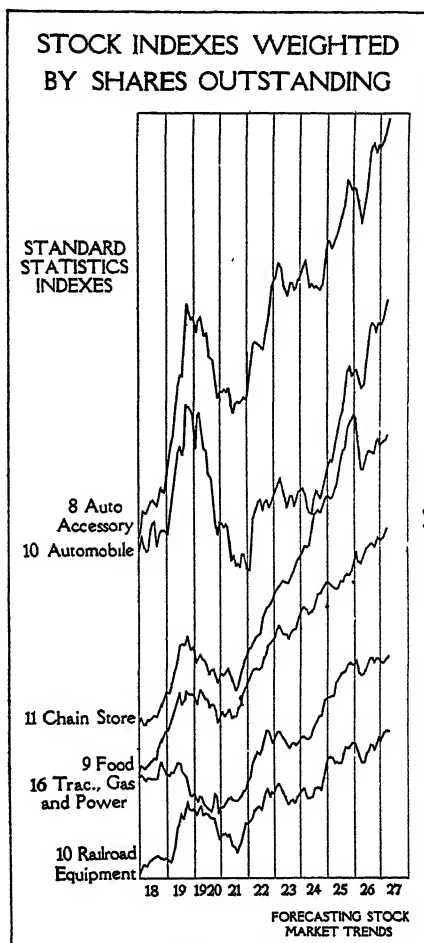


CHART 50

this system, industries like the textiles and theaters, whose typical unit is a concern too small to list stocks on the Exchange, will not be weighted very heavily.

On the other hand, when an industry is dominated by a few large corporations, as the oil, telegraph, and steel industries are, the stock of all the larger concerns will be listed, and the industry will receive a weighting quite disproportionate to its true significance from the standpoint of the many investors in stocks of small companies throughout the country. This index, therefore, seems to be especially useful to those investors who are interested in the changing values of all *listed* stocks.

The Standard Index is the most comprehensive yet attempted. Charts 49 and 50 show some of the separate groups as well as the index for all groups combined. It is readily seen from these two charts that the groups fluctuate quite differently, although all the indexes tend to rise when the general market is rising and tend to fall when the general market is falling.

A SPECULATIVE INDEX NEEDED

The indexes considered up to this point are not of any great value in judging the speculative side of the stock market, because they do not indicate the *volume* of transactions in the various stocks. When the price of a stock rises \$10, it usually makes a great difference from a speculative viewpoint whether there were 1,000 shares or 100,000 shares of that stock sold. The indexes described so far give no more significance to a sale of 100,000 shares than they do to the sale of 1,000 shares.

In weighting stocks according to the number of shares outstanding, the Standard Index has made partial allowance for this factor, because as a rule there is more trading in stocks of large companies than in those of smaller ones. Often, however, the stocks of the smaller companies are manipulated in such a manner that an increase in trading out of all proportion to the amount of stocks outstanding results. Moreover, the stocks of the

older and larger companies are often so securely held by permanent investors that there is very little speculative trading, although there may be a large volume of stocks outstanding.

SPECULATIVE INDEXES

In an attempt to estimate the changes in value of stocks in relation to the volume of trading, Professor Irving Fisher constructed an index in which he weights the stocks according to the number of shares of stock traded. Professor Fisher uses a formula similar to the one used in computing his commodity price index, a formula which determines the importance of each stock every week, according to the number of shares traded. This formula has met with the approval of mathematicians and economists.

Readers of "Barron's" have recently been introduced to two new stock indexes computed by Professor Crum of the Harvard Economic Service. The aim in these new Barron's "averages" is to show the speculative side of the market, much as Professor Fisher does by making allowances for "*the value of stocks in exchange.*"

DIFFERENCES BETWEEN FISHER'S AND BARRON'S INDEXES

These indexes differ somewhat from the Fisher Index. Professor Fisher computes only one index for both the rails and industrials, and selects the 50 stocks which are to comprise his average for each week according to the total value "in exchange" of all stocks for that week. In other words, the price of each stock each week is multiplied by the number of shares sold, and the 50 stocks with the highest aggregate value are selected for use. This method of selection gives preference to the high-priced stocks of the larger companies.

Professor Crum has chosen a different criterion in selecting the stocks used in Barron's railroad and industrial stock averages. He uses "the rate of turnover," that is, each week he chooses the 30 railroad stocks and the 30 industrials with the highest ratio of sales to number of shares outstanding. In this way, a company with

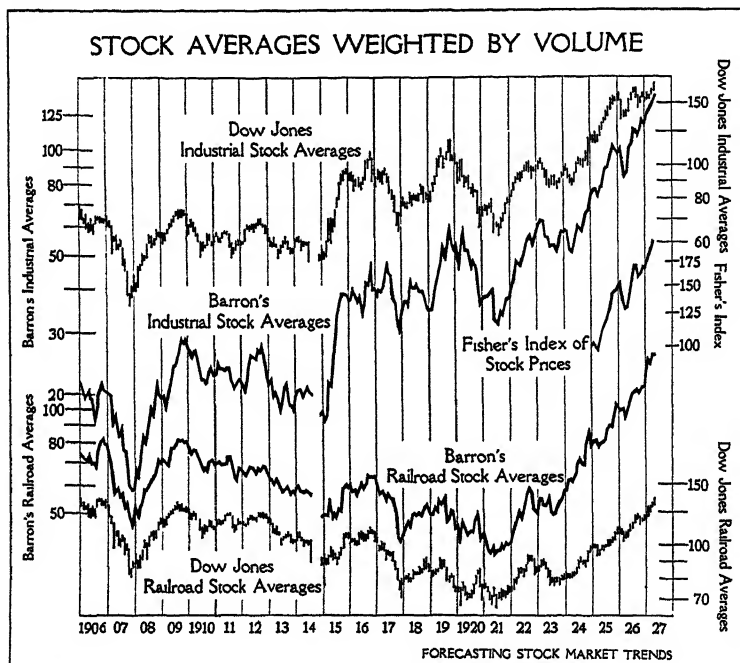


CHART 51

100,000 shares outstanding and current stock sales of 50,000 is given equal importance with the company which has 1,000,000 shares outstanding and a turnover of 500,000 shares, for both have a "rate of turnover" of 50%. In the Fisher Index, however, these companies could only rate equally as a possible selection for the week, if stock in the company with a 50,000-share turnover sold at \$100 per share, while the other with sales

of 500,000 sold at \$10. In that case, the aggregate value of both would be \$5,000,000. In this manner, the Fisher Index attaches greater significance to high-priced stocks and to stocks of larger companies, while Barron's selects stocks each week according to the *relative* amount of speculation in each company's stock.

Another technical difference between the two may be observed. Professor Fisher takes into account changes in the price of each stock from one week to another, in relation to both the volume of the present week and that of the previous week; while Barron's Index considers changes in prices from one week to another, only in relation to the volumes of the previous week. These differences, however, are apparently inconsequential, if one is to judge from the fluctuations of the indexes; for Chart 51 shows that Professor Fisher's Index and Barron's Industrial Average move together quite closely.

BARRON'S AND DOW JONES COMPARED

Since the new Barron's averages have been computed back through 1906, it is possible to compare their fluctuations with those of the Dow Jones averages over a considerable period of time. It is especially interesting to compare the two railroad averages, keeping in mind that the Dow Jones figures show changes in the *investment* value, while Barron's Index shows changes in the *speculative* value of stocks. Through the bear market of 1907 and the bull markets of 1908 and 1909, Barron's average showed wider fluctuations. After 1909, until the middle of 1921, there was very little difference between the two. But beginning in 1921, Barron's average again commenced to fluctuate more widely than the Dow Jones figures.

If the industrial averages are compared in this way, it will be seen that the speculative average shows wider

fluctuations except in 1910, 1911, and 1912, and during the war years of 1917 and 1918.

Thus, from 1909 to 1921, speculative interest in the railroads was slight and the averages agreed closely. Anti-trust legal prosecutions during 1910, 1911, and 1912, and the war in 1917 and 1918 diminished speculation in the industrials, and during these years the two averages agreed closely. But whenever speculation in securities is intense, Barron's figures will fluctuate over a wider range than those of Dow Jones; whenever speculation is less active, the two averages will agree more closely.

SUMMARY

To summarize briefly the different devices for measuring stock prices: The Dow Jones averages are the oldest averages, and show very accurately the trend of the market as well as the general level of listed investment common stocks from one year to another; other averages, like those of the "New York Times," agree very closely with the Dow Jones figures; the Standard Index of Stock Prices is the broadest, and shows price trends in different industries separately; Fisher's Index shows the speculative side of the entire stock market, while Barron's averages show the speculative side of the industrial and railroad markets separately. Each average and index has special uses for which it is best adopted, but for general purposes the Dow Jones averages show general tendencies of stock prices with remarkable accuracy.

CHAPTER XIX

The Dow Theory

IF one wishes to determine whether the general stock market is rising or falling, or to compare the present level of stock prices with past levels, the Dow Jones averages seem to be about as useful as the more complicated averages and indexes. These simple averages of 20 industrial and 20 railroad stocks are available on a daily basis back to 1897, and give a very accurate picture not only of the trend of the market at any particular time, but also of the general level of investment stock prices.

But another very important use has been found for these figures. A study of their daily and weekly fluctuations over a long period of time has shown that, at the crucial turning points of stock prices, the averages often behave in such a way that the future trend of the stock market can be clearly foreseen. Thus the Dow Jones averages are widely used today as forecasting agencies.

Undoubtedly any other average constructed along the same lines would be as useful as the Dow Jones figures, but this forecasting property has been especially attributed to these averages because Charles H. Dow, the first man to take an average of stock prices, was also the first to observe the peculiar properties which made them valuable in forecasting. Since Dow's death in 1902, W. P. Hamilton, editor of "The Wall Street Journal," has been able, with the help of additional years of experience with their fluctuations, to modify Dow's observations to fit present conditions. Mr. Hamilton is the ablest exponent of the Dow Theory; and his book, "The Stock Market Barometer," explains how he has put the theory to practical use in the daily columns of "The Wall Street Journal."

ONLY A FEW RECORDS AT DOW'S DISPOSAL

Today there is evidence that most of the observations made by Dow twenty-five years ago were remarkably accurate. At a time when the terms "business cycles" and "economic services" were unknown, he observed that at all times there are three kinds of fluctuations taking place in the stock market: the major trend, called bull or bear markets; the secondary swing, lasting usually from ten days to forty days; and the day-to-day fluctuations. Today, with voluminous records at one's disposal, it is easy to look back and remark that it was a simple matter to observe these three types of fluctuations. Dow, however, had only the records of a few short years when he made the observations which were the basis for his theory.

As interpreted today, the averages are used to forecast both business and stock market trends. In one case, business conditions for several months ahead are predicted by the position of the stock market at any particular time. But since this book is primarily concerned with the problem of forecasting stock market trends, it is the ability of the averages to forecast future stock prices that is of particular interest here.

USEFUL PRINCIPALLY TO PREDICT MAJOR TRENDS

Dow's theory does not attempt to predict all the different types of stock market fluctuations. Of the three types of movements—the major, secondary, and day-to-day fluctuations—the averages are generally used to predict only the major bull and bear markets. Occasionally they successfully predict the secondary movements, which last from ten to forty days, but no great significance is attached to this feat. The attempt is never made to forecast the daily fluctuations.

"LINES" OF ACCUMULATION AND DISTRIBUTION

Another essential part of the Dow Theory is the idea of a "line." It is observed that at times the averages show neither an upward nor a downward trend, but move within a narrow range in a sidewise movement. The averages are then considered to be "making a line," and whether they finally break through the top or bottom of this line is considered of great speculative importance. Experience has shown that if both averages break through the upper limits, the line will thereby have proved itself to be a "line of accumulation," and the entire market may be expected to rise much higher. On the other hand, if both averages break through the lower limits of the line, it is a "line of distribution," and the market will go lower.

That this idea of a line is used by many successful stock market operators is indicated in a statement made by Jesse L. Livermore, in Edwin Lefever's "Reminiscences of a Stock Operator." In discussing the methods that he uses in trading, Mr. Livermore is quoted as saying:

"In a narrow market, when prices are not getting anywhere to speak of, but move within a narrow range, there is no sense in trying to anticipate the next big movement, whether it is going to be up or down. The thing to do is watch the market to determine the limits of the get-nowhere prices and make up your mind that you will not take an interest until prices break through the limits in either direction."

Stock traders have learned from long experience that a "line" indicates a period in which stocks are being either "accumulated" or "distributed" by the more powerful stockholders. If the averages break above the line, a period of accumulation, during which stocks have passed from weak to strong hands, has ended, and stock prices will rise; if they break below the line, it may be assumed

that stocks have passed from strong to weak hands and that the market will go much lower.

“DOUBLE TOPS” AND “DOUBLE BOTTOMS”

Finally, there is incorporated into the Dow Theory the idea of “double tops” and “double bottoms.” Dow explained the basis for his theory of double tops and double bottoms when he said, “Another method (of stock trading) is what is called the theory of double tops. Records of trading show that in many cases, when a stock reaches top, it will have a moderate decline and then go back again to near the highest figures. If after such a move the price again recedes, it is liable to decline some distance.”

When this idea is applied to the averages, it simply means when the averages have made a high and reacted from that high and then go back near the first high and again react, that the trend of the market is probably changing and that a decline of some proportions is in store. This theory holds equally well for a declining market, when a “double bottom” indicates a change in trend.

THE FOUR MAIN POINTS IN DOW'S THEORY

Now, to summarize briefly the component parts of Dow's Theory, it is observed that: (1) there are three types of fluctuations in the averages going on at all times—the major, secondary, and daily trends; (2) the industrial and the railroad averages must corroborate each other; (3) when the two averages break above a “line,” the indication is bullish, and below the “line,” bearish; and (4) a “double top” or “double bottom” predicts a change in the trend of stock prices. The theory will now be examined with the evidence available in the averages for a period extending back over thirty years.

KNOWLEDGE OF BUSINESS CONDITIONS HELPFUL

Some people interpret the movements of the averages upon a purely mathematical basis, without taking into consideration any of the fundamental factors in the business situation. However, Mr. Hamilton, the accepted authority on Dow's Theory, seems to take into account many other factors in the business situation. While he does not believe that the averages should be actually combined with other figures showing wholesale prices, money rates, unfilled steel orders or any other phase of the business situation, because "stock prices have already taken these things into consideration," it is clear from his reading of the averages that he follows the business situation very closely. One of Mr. Hamilton's remarkably accurate forecasts of an impending bull market which appeared in "Barron's" on November 5, 1921, will perhaps give an indication of the method he uses in reading the averages: "I have been challenged to offer proof of the prediction value of the stock market barometer. With the demoralized condition of European finance, the disaster to the cotton crop, the uncertainties produced by deflation, the unprincipled opportunism of our lawmakers and tax-imposers, all the aftermath of war inflation—unemployment, uneconomic wages in coal mining and railroading—with all these things overhanging the business of the country at the present moment, the stock market has acted as if there were better things in sight. It has been saying that the bear market which set in at the end of October and the beginning of November, 1919, saw its low point on June 21, 1921, at 64.90 for the twenty industrials, and 65.52 for the twenty railroad stocks."

As editor of a leading financial paper, Mr. Hamilton is in close touch with general business conditions, which knowledge he seems to use in interpreting the movements of the averages. For the average investor, who is less

close to the business situation, it therefore seems advisable to watch other barometers, like those discussed in previous chapters, in order to obtain a knowledge of general business conditions.

CHARTS SHOW ONLY TURNING POINTS

In Charts 52 and 53 the averages have been charted on a weekly basis in order to show more clearly the progress of "lines" and the "double tops" and "double bottoms." Consistent with the chief purpose of this book to forecast major trends rather than secondary or daily fluctuations, only that part of each bull and bear market which indicates, according to Dow's Theory, a change in the major trend, is shown on the charts. Chart 52 shows the tops of the major bull markets from 1897 to date, and Chart 53 shows the low points of the major bear markets. It should be remembered they do not attempt to show the amount of the total rise or decline.

Of the many barometers of the stock market considered in foregoing chapters, there were three which were found to be especially useful as barometers of general business conditions and the stock market. They were the prices of pig iron, bar iron, and coke; the pig-iron production figures; and the rate on 60 to 90-day commercial paper. A way of reading these figures so that they would indicate the future trend of the stock market was worked out. The numbers "1," "2," and "3," respectively, have been used in Charts 52 and 53 to show when each of these barometers indicated that the major trend of the market was turning. When the barometer made up of pig iron, bar iron, and coke prices predicted a bear market, the "1" is placed above the averages on Chart 52, at the particular point where the barometer said "sell." When the barometer predicted a bull market, the "1" is placed in the proper month below the averages

in Chart 53. Similarly, if the index for pig-iron production signaled a rise or a decline in stock prices, a "2" is placed upon the proper chart at the month when the indication was given. And when 60 to 90-day commercial-paper rates signaled to "sell" or "buy" stocks, a "3" is placed above or below the average.

In this fashion, every indication given by each of these three reliable barometers during the period of thirty years is placed on either one chart or the other, and it is easy to compare the barometric qualities of each with the others. Such a comparison will give a good idea of the practical value of these barometers. It should be remembered, however, that when a barometer comes within ten points—two horizontal lines on these charts—of picking the top of a bull market or the bottom of a bear market, it is a very reliable barometer.

NO TWO MARKETS THE SAME

It is impossible to set down definite rules by which one can tell from the averages that the trend of the market is changing. Sometimes, at the end of a bull market, the averages make a double top and then make a line for several weeks, finally breaking through the lower limits of the line. At other times they will make triple or even quadruple tops, and sometimes make two or more lines before the change in trend is finally accomplished. Always, however, the averages give at least one warning; and it takes a long enough period of time for the trend to change to afford the person who watches the fluctuations of the averages time to act before it is too late.

In dealing with the averages, one has many unusual factors with which to contend; for besides the fact that even fundamental factors themselves change from time to time, as the end of each major stock market swing

approaches, the speculator invariably finds himself confronted with some new factor to be taken into account. At one time it was the corner in Northern Pacific stock, another the San Francisco earthquake, or the failure of the Knickerbocker Trust Co., or the dissolution of the Standard Oil and American Tobacco companies, the declaration of war or the declaration of peace—always some new factor is injected into the situation which affects speculative sentiment and gives the averages a different appearance at the end of each major movement. But in spite of all these unusual factors which enter into the situation, if one interprets the fluctuations of the averages according to the Dow Theory, a warning is given.

GAUGING THE TOP OF BULL SWINGS

It is interesting to trace the fluctuations of the averages at the end of bull markets as shown in Chart 52, and to see how soon Dow's Theory would have given warning of a change in trend.

The year 1899 saw the culmination of the first bull market for which the Dow Jones averages are available. Chart 52 shows that in April both averages reacted sharply after reaching a high point. By the first of September the industrials had rallied to their old high, while the rails were a few points below the high record as established in May. Neither of the averages was able to attain a new high, and again they reacted. A feeble rally in November brought both averages to a level where they began to make a "line," with the two averages moving sidewise for a period of six weeks, finally breaking through the lower limits of their lines.

According to Dow's Theory, as generally interpreted today, when the averages made the "double top" by failing to make new highs in September, the first indica-

tion was given that the end of the bull market was near. If the usual method of reading the averages had been used in 1899, it might have been pointed out that, at a

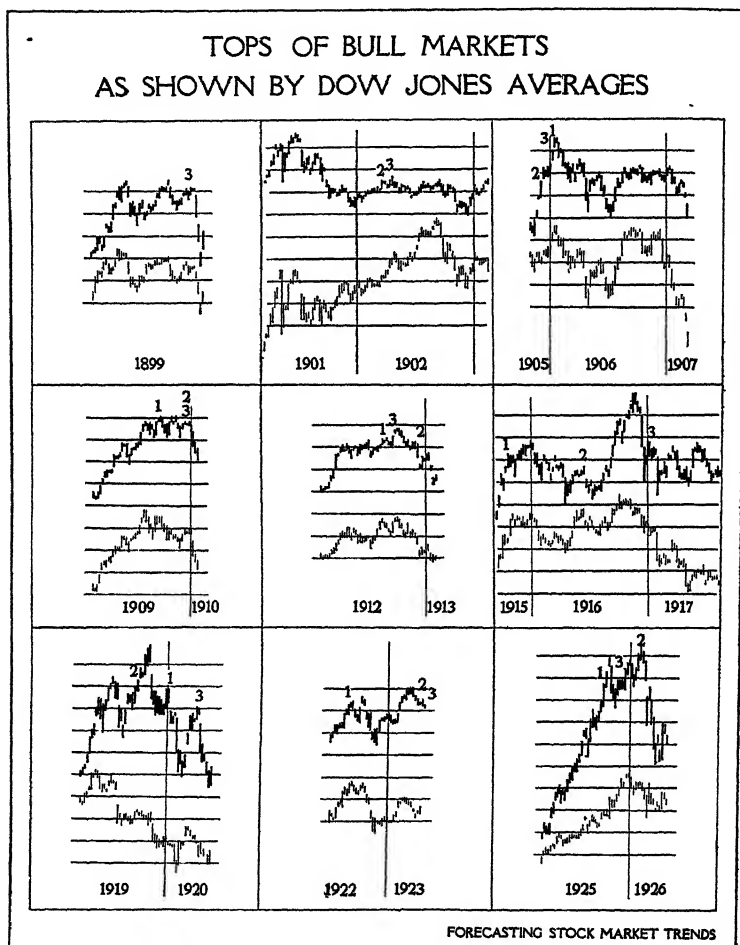


CHART 52

The Industrial Averages are shown in the upper and the Railroad Averages in the lower part of the section allotted to each bull market. The horizontal scale lines are spaced at intervals of 5 points.

time when trade was expanding rapidly, with large flotations of new securities, rapid increase in commodity prices, rising wages, large imports, and tightening money rates, the averages had given warning of the end of the then current bull market by making a "double top." Later in November, when the lower limits of the line were broken through, the averages gave final notice that the major trend had changed.

THE NORTHERN PACIFIC CORNER

Toward the end of the bull market of 1900-1901, the industrials had risen only moderately, while there had been a great increase in railroad shares accompanying the famous contest between the Hill and Harriman interests for control of the Northern Pacific. In May the corner in Northern Pacific stock was announced, and a sharp drop in both rails and industrials followed. Six weeks later, however, both industrials and rails were back to their old highs again. The industrials went through the old high by a scant margin, but the railroad averages refused to corroborate the bullish tip of the industrials. This "double top" gave the first warning that the trend of the market was to change.

The Northern Pacific corner, however, was not enough to bring the bull market to an immediate close, because fundamental conditions were still bullish, with money easy, commodity prices low, and production active. So the industrials proceeded to make what proved to be the longest line in history, fluctuating with a range of five points for ten months. During this period the rails rose very gradually, until finally a record volume of production caused a railroad traffic blockade, money rates tightened, commodity prices rose, and bond prices fell. By September the railroad averages had made a new high, but lacking corroboration from the industrials they declined.

Thus by November, when the industrials finally broke through the lower limits of their line, bearish tips had been given by the double top in June, 1901, the failure of the industrials to confirm the movement of the rails, and this new bearish indication of the industrials given by their breaking below the line.

It would be tiresome to trace the implications of the averages at the end of each bull market. Many times unusual factors enter into the situation, but in spite of them all the averages usually give definite warnings that the top has been reached. And very often a long series of warnings are given when the averages make double and triple tops, fail to corroborate each other, and break below lines of distribution. It is plainly seen from Chart 52 that while the turning points of some markets have been more widely advertised than others, yet in every case a close application of Dow's Theory would have shown that the trend was changing.

ACTIONS OF AVERAGES IN BEAR MARKETS

The method of reading the averages at the end of a bear market does not differ radically from the methods used at the close of a bull market, except of course that the fluctuations are reversed, and, instead of forming "double tops" and "lines of distribution," they form "double bottoms" and "lines of accumulation."

Chart 53 shows that beginning in November, 1899, a mild bear market set in which reached a low point in December, 1899. Both averages rallied, but in June, 1900, again approached the old lows. The industrials made a new low, while the rails failed to confirm the move. During this period commodity prices were falling, money was easy, and iron and steel production declining. Another rally in both averages took place, which was

followed two months later by another "double bottom," again indicating that the bear market was over.

An examination of Chart 53 will show that there is a definite tendency for the averages to make "double

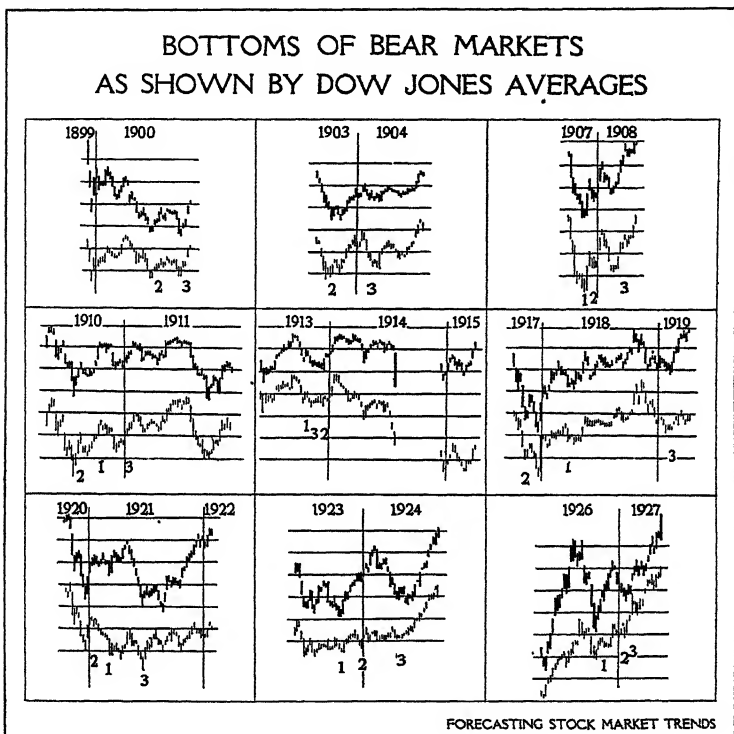


CHART 53

The Industrial Averages are shown in the upper, and the Railroad Averages in the lower part of the section allotted to each bear market. The horizontal scale lines are spaced at intervals of 5 points.

bottoms" at the end of bear markets, although very often they are as much as a year apart. And frequently after making a "double bottom," the averages will "make a line" for weeks at a time and finally break out of the line on the upside, thus adding to the evidence given by a "double bottom" that a bull market is ahead.

CANNOT EXPECT MECHANICAL PERFECTION

Thus the problem of forecasting rising stock prices according to Dow's Theory is much like that of forecasting falling stock prices, except that conditions are reversed. Instead of finding that continued resistance to rising stock prices causes "double tops" and "lines of distribution" in the averages, it is found that continued resistance to declining stock prices causes "double bottoms" and "lines of accumulation."

The charts show clearly that there are no hard-and-fast rules which will announce when the trend of the market is changing. Probably it is the impossibility of setting down mathematical rules to be applied in reading the averages which has led to much criticism of Dow's Theory. However, the record of the averages seems to show that invariably the theory gives some indication that the trend of the market is turning. As Mr. W. P. Hamilton points out, "the stock market is taking every conceivable thing into account, including that most fluid, inconstant, and incalculable element, human nature itself. We cannot, then, expect the mechanical exactness of physical science."

CHAPTER XX

The Importance of Studying Basic Conditions

THE head of a prominent economic service was once asked what the result would be if all the basic factors influencing the business cycle were thoroughly understood and could be accurately measured. The natural assumption was that periods of extreme prosperity or depression would be completely eliminated, that business would move easily along the same smooth groove. His answer was that when we reach the point where the unusual never happens, where there is no difference between people, and when we have become a race of bookkeepers with plodding minds, with business merely a matter of addition and subtraction,—then, and only then, will business move along a smooth, straight road.

The science of forecasting has just begun, to be sure, but we can never hope for the time when each one of the factors influencing the business system can be forecasted with 100% accuracy by every individual business man. A new banking system, a war, a new income tax law, a new invention, and literally thousands of other factors, will each have an effect upon business conditions. Only if every business man could understand all the ramifications of the business system, so that he could forecast the future with 100% accuracy and conduct his business accordingly, could the business cycle cease to exist and alternating periods of prosperity and depression be things of the past.

The foregoing studies have not attempted to present any definite theory regarding causes of the business cycle. Bull and bear markets were accepted as actualities,

and an attempt was made to select from the wealth of available data, statistics which seemed to have an obvious bearing upon those conditions. The most valuable theories and statistics have been discussed with that purpose—to explain and predict general stock market changes.

STATISTICS WHICH SHOW BASIC CONDITIONS

The statistics used in previous chapters have, for the most part, indicated conditions outside the market itself; that is, they have shown general business conditions and trends. Statistics of conditions within the market relating to such things as its "technical position," the "floating supply" of stocks, "loaning rates," and the like, have not been considered, because they are more particularly concerned with the minor movements of stock prices.

Many different types of data have been reviewed rather than selecting only the most valuable series and limiting the discussion to them. It is believed that a thorough understanding of the significance of all data is essential, and that the ability to discriminate between the worthless and the valuable is more useful in forecasting and reading forecasts than a knowledge of a few especially accurate agencies. A complete variety of statistics affords a comprehension of all factors which influence the trend of stock prices at any one time.

DO NOT EXPECT MATHEMATICAL PRECISION

The value of charts is obvious. The briefest and clearest explanation of the relation between any one series of data and the stock market is a chart showing both trends together. The value of charts is often misunderstood, however. In observing the accuracy with which certain series move with the stock market, one begins to

expect mathematical accuracy of all data. But statistical records of any sort are liable to be inaccurate, and the margin of error is increased when the statistics deal with human relationships. Besides containing certain elements which are very difficult to measure, the data must pass through the hands of armies of field agents and clerks, with the possibility of error increasing at each step; so that when the data are finally charted, they are incapable of mathematical precision and merely show trends. As indicators of general trends, however, they are valuable, but it is always necessary to use judgment and discretion in their interpretation.

SIMPLICITY OF THE MOVING AVERAGE

Many devices are continually being developed by statisticians to eliminate the confusing seasonal variations and secular trends apparent in certain types of data. The use of most devices, however, will obscure the original figures to such an extent that they are difficult to understand, and will make it impossible for individuals untrained in statistical methods to keep the data up-to-date for current use.

The twelve-month moving average was chosen because of its simplicity and efficiency. The figures of any series of data for twelve consecutive months are added together, and the result is divided by twelve to obtain the moving-average figure for the twelfth month. This practice of "centering" the average on the last month tends to make the average move five or six months later than the actual figures. For certain purposes such a moving average would have distinct drawbacks; but in forecasting, the problem is largely one of time relationships between the series of data and the trend of stock prices. If this relationship is a consistent and practicable one, it will show up in the moving average as constructed here, and more

elaborate statistical methods of averaging figures do not seem necessary. Here the chief interest is in trends and in the timing of fluctuations, rather than in measuring quantitatively the position of any one statistical series at a particular time.

THE BEST STOCK MARKET BAROMETERS

In the preceding chapters, the statistics examined were divided into six sections, each of which showed a particular phase of the business situation. Those data which were found to be most helpful in stock market forecasting are indicated in the following table:

- | | |
|--|--|
| 1. <i>Profits and Losses:</i> | business failures; railroad gross earnings; dividend payments |
| 2. <i>Commodity Prices:</i> | pig iron, bar iron and coke; indexes of wholesale prices; composite iron and steel indexes |
| 3. <i>Production and Consumption:</i> | bituminous coal; pig iron, steel, coke; indexes of production; sales of retail stores, especially music stores |
| 4. <i>Volume of Trade:</i> | car loadings of ore, forest products, coal and coke |
| 5. <i>Money and Banking:</i> | loan-deposit ratio national banks; loan-deposit ratio New York Clearing House banks; rediscounts Federal Reserve Banks; rates 60-90-day commercial paper; call money rates |
| 6. <i>Investment and Speculative Activity:</i> | Dow Jones averages; Fisher's and Barron's averages; Standard Index; bond yields |

Each of these six factors has a distinct bearing upon the value of stocks, and they are definitely related, therefore, to the trend of stock prices. It is possible in this brief

summary to point out only the data of greatest value in stock market forecasting.

NO SHORT CUTS TO SUCCESS IN SPECULATION

When one has chosen the statistics which seem to be of most value in forecasting the stock market, he is confronted with the problem of keeping the data up-to-date. The use of any of the series described here requires a close scrutiny of the current figures and the fundamental conditions which such a study discloses. If one is unwilling to devote a considerable amount of study to a continual observation of current figures as they become available from month to month, he had better decide to become strictly a long-pull investor. But even in that case, he must watch very closely the individual companies whose stocks he holds. There are no "short cuts to success" in speculation; constant study and attention are necessary at all times.

ADVANTAGE OF USING UNCOMBINED STATISTICS

The practice of combining several of the more reliable indexes to obtain forecasting lines has been followed by many economic services, including the Harvard Economic Service, Babson's Statistical Organization, and Brookmire's Economic Service. Possibly, however, a clearer understanding of the fundamental forces affecting stock prices will be attained through following the various series of statistical data individually. To combine them necessarily requires elaborate statistical methods which tend to obscure any indications offered by the individual series used. When the more useful indexes are followed individually, one has a broader understanding of many different phases of the situation and would probably be enabled to trade more intelligently in stocks. Furthermore, it is doubtful that any one line, however many

indexes were combined to form it, would give more accurate buy-and-sell indications than those offered by a number of individual series, such as pig iron, steel or coke production, price statistics or money rates.

BETTER BAROMETERS USUALLY AGREE

It might be thought that the use of the different series separately would be confusing, and that they would show markedly different indications. It has been observed, however, that the majority of the most reliable barometers are always substantially in agreement, and rarely disagree in predicting a major movement in stock prices. In the foregoing chapters it was shown that three of the best barometers—commercial-paper rates, pig-iron production, and the prices of the three commodities, pig iron, bar iron, and coke—agreed closely in their buy-and-sell indications; so that in following these or similar barometers, one is generally furnished with a reliable basis upon which to prepare for a change in the trend of stock prices.

MORE DIFFICULT TO PREDICT BEAR MARKETS

Throughout this discussion of barometers it has been a noticeable fact that a bear market is not so easily predicted as a bull market. This does not seem to constitute a serious limitation, however, since the trend of stock prices will be continually upward so long as the wealth of the country continues to grow. The chronic bear, it is well known, will eventually go broke. The bull, however, is always favored, for, as the wealth of the country increases, the value of stocks will increase so that the top of each bull market is a little higher than the preceding one, and the bottom of each bear market is not quite so low as the one before. One may remain "a bull on the United States" and stay long of stocks indefinitely; but if one becomes a permanent bear on the country, he

is sure to lose. In trading with the major swings of the stock market, one should always favor the bull side whenever the barometers fail to point definitely which direction the trend of the market will follow.

In trading, a speculator may pay particular attention to the market, or he may study individual stocks and trade according to his conclusions concerning them. It was observed in the first chapter, however, that all stocks move to a certain extent with the trend of the market. Those stocks which move against the trend, usually move so very moderately that it would be of no great value to follow them even if one could. It is essential that the investor realizes the great importance of the effect of market trends upon all stocks, a tendency which, contrary to public opinion, has not been diminished in recent years.

IMPORTANCE OF FOLLOWING GENERAL BUSINESS CONDITIONS

One of the leading stock market traders of recent years has expressed his estimate from a speculative standpoint of the value of following general business conditions, as compared with the value of studying individual stocks. All too few stock operators have divulged any of their methods of trading, but Jesse L. Livermore is quoted in various parts of Edwin Lefevre's "Reminiscences of a Stock Operator" as saying:

"In a bull market your game is to buy and hold until you believe that the bull market is nearing an end. To do this you must study general conditions and not tips or special factors affecting individual stocks. Then get out of all your stocks; get out for keeps! Wait until you see—or if you prefer, until you think you see—the turn of the market; the beginning of a reversal of general conditions.

"That is about all I have learned—to study general conditions, to take a position and stick to it.

"I never hesitate to tell a man that I am bullish or bearish. But I do not tell people to buy or sell any particular stock. In a bear market all stocks go down and in a bull market they go

up. I don't mean of course that in a bear market caused by a war, ammunition shares do not go up. I speak in a general sense. But the average man doesn't wish to be told that it is a bull or a bear market. What he desires is to be told specifically which particular stock to buy or sell. He wants to get something for nothing. He does not wish to work. He doesn't even wish to have to think. It is too much bother to have to count the money that he picks up from the ground.

" . . . The big money must necessarily be in the big swing. Whatever might seem to give a big swing its initial impulse, the fact is that its continuance is not the result of manipulation by pools or artifice by financiers, but depends upon basic conditions. And no matter who opposes it, the swing must inevitably run as far and as fast and as long as the impelling forces determine.

" . . . Since the entire list moves in accordance with the main current there was not so much need as I had imagined to study individual plays or the behavior of this or the other stock. Also by thinking of the swing, a man was not limited in his trading. He could buy or sell the entire list. Obviously the thing to do is to be bullish in a bull market and bearish in a bear market.

"The moment I ceased to be satisfied with merely studying the tape, I ceased to concern myself exclusively with the daily fluctuations of specific stocks, and when that happened I simply had to study the game from a different angle. I worked back from the quotation to first principles; from price fluctuations to basic conditions.

"Hunches and mysterious ticker-sense haven't so very much to do with success. . . . Like the physician who keeps up with the advances of science, the wise trader never ceases to study general conditions."

THE IMPORTANCE OF DIVERSIFICATION

Mr. Livermore has also given some idea of the method he uses in selecting the stocks in which to trade when he takes a short position in the market. He says: "I kept on both buying and selling until after a month's trading I had out a short line of sixty thousand shares—five thousand shares in each of a dozen different stocks which earlier in the year had been the public's favorites because they had been the leaders of the great bull market." One would also judge from this enlightening statement as well as from others that in taking a bull position in stocks,

he reverses the process followed in selling and buys a diversified list of stocks.

These statements by Mr. Livermore indicate that successful stock speculation must take two factors into consideration: the trend of the market as shown by general business conditions, and the diversification of stocks among the market leaders. In various books, and most recently in Mr. P. L. Carret's "The Art of Speculation," the methods of selecting individual stocks to be used as the vehicles of speculation have been adequately presented. This volume on "Forecasting Stock Market Trends" has attempted to show in detail how one may gauge the trend of the market from basic conditions.

PROSPERITY WILL NOT BE ETERNAL

Since 1921 business has been neither very active nor very dull. It has been a period of moderate prosperity, during which the idea has become prevalent that business extremes—severe depressions and periods of intense prosperity—are things of the past. Such prolonged periods of moderate prosperity as this, however, are not new in the history of industry, for they have occurred frequently in many different countries. And it generally happens that as the impression becomes more universal that prosperity is to continue indefinitely, a period of intense prosperity followed by a severe depression approaches.

The silent forces always influencing business and the stock market to move in cycles are still omnipotent, and will be puzzled over for many years to come. Several attempts have been made in the past and many will be made in the future to provide some means of smoothing out the cycle. Until the statistics themselves show that business is moving along an even path, however, the business cycle still exists and must be reckoned with.

RECORDS OF THE PAST

The National Bureau of Economic Research has recently published a book, "Business Annals," which reviews the business conditions in seventeen of the most important industrial countries back as far as records are available. The purpose was to investigate the ebb and flow of business in each country from as early a date as possible in an attempt to reach some conclusions about the nature of the business cycle. This study has made available a great deal of information of interest to anyone concerned with the problems of forecasting.

"Business Annals" reveals much information of great significance in stock market forecasting. For instance, it shows that no country experiences a period of continuous prosperity for more than five or six years at a time; while some countries have more violent swings of the business cycle than others, no country has been able to control them; and periods of depression and prosperity may occur again and again in all countries, but no two are exactly alike either in duration or intensity.

TENDENCY FOR BUSINESS CYCLES TO BECOME
INTERNATIONAL

Business cycles occur most regularly in countries with a highly developed economic organization, as in those of Western Europe or the United States. In some countries, periods of prosperity last much longer in relation to periods of depression than in other countries, as is shown by the following table:

	Period	Years of Prosperity per Year of Depression
United States.....	1790-1925	1.50
England.....	1790-1925	1.11
France.....	1840-1925	1.18
Germany.....	1853-1925	1.18
Austria.....	1866-1925	0.70

Obviously business cycles do not run parallel courses in any two countries. The closest agreement was found between England and France or between England and Germany. The widest variation was between the United States and Austria. There has been a growing tendency in recent years for business cycles to become more international in their fluctuations.

Even within the United States the fortunes of the various sections were markedly dissimilar in earlier years. The variations are being diminished, however, as business relations grow more extensive in character. Today one must view the country as a whole when determining the condition of general business, although even today, especially in the great farming belts, conditions vary decidedly. Yet the annals picture the vastly greater population of today, spread over a vastly greater territory, as having more unity of fortune than was experienced by the people of the thirteen original states and the frontier settlements of 1790 to 1820. The network of business relations has been growing closer and firmer, and at the same time it has been stretching over wider areas.

AVERAGE LENGTH OF BUSINESS CYCLES

Finally, the annals have presented some interesting data showing the *average* length of time consumed by a complete business cycle. In reading these conclusions one must keep firmly in mind the fact that no two business cycles ever last exactly the same length of time. A summary table of the conclusions follows:

FIRST HALF OF PERIOD

	Dates	No. of Years	No. of Cycles	Average Duration (yrs.)
France.....	1838-1876	38	8	4.75
Germany.....	1848-1890	42	8	5.25
Austria.....	1866-1894	28	5	5.60
England.....	1793-1857	64	13	4.92
United States.....	1796-1860	64	16	4.00

SECOND HALF OF PERIOD

	Dates	No. of Years	No. of Cycles	Average Duration (yrs.)
France.....	1876-1920	44	7	6.29
Germany.....	1890-1925	35	7	5.00
Austria.....	1894-1922	28	5	5.60
England.....	1857-1920	63	9	7.00
United States.....	1860-1923	63	16	3.94

This table shows clearly that business conditions—and the stock market—experience more frequent swings of prosperity and depression in the United States than in any other country, and that during the past sixty-three years there has been an increasing tendency for those movements to recur more frequently. While it is impossible to forecast periods of rising or falling stock prices purely on the basis of time, it is safe to expect these periods to occur in the future more frequently in the United States than in any other country. In this country, therefore, it is relatively more important—and more profitable—to attempt to gauge the major swings, because there are more of them. In the first chapter of this book, it was shown that the severity of stock price swings has not been diminished during recent years, which again indicates that it is just as important to gauge the market trends today as it was twenty years ago.

SPECULATION ESSENTIAL PART OF BUSINESS SYSTEM

In these studies no attempt has been made to either defend or condemn the practice of speculation. The wide and frequent fluctuations in stock prices have been accepted as a fact, and the chief consideration has been in trying to find the best way of dealing with that fact. If one believes it morally wrong to sell any article from a bushel of wheat to a parcel of real estate because he believes the price of that commodity will fall, or because he believes the money received from such sales may be used to better advantage elsewhere, he should not, for his

conscience' sake, trade with the major swings of the stock market. Those who do trade and make money on the major swings of stock prices, however, are performing a useful service; for by selling in large quantities when the market is high, and buying when prices are low, their trading narrows the price fluctuations and creates a better market in which all may buy and sell securities.

After examining various economic forces which have been shown to have greater or less effect upon the trend of stock prices, it is impossible to give any credence to the belief that a group of men control the fluctuations of the stock market. Fluctuations similar to those experienced in the United States are common to every country. It is absurd to believe that each nation has a contingent of powerful financial rulers, especially when the business cycles in the different countries sometimes coincide and sometimes do not. Each country could not have its "Wall Street Interests," who not only control finance within the country but combine with similar foreign interests to control world business cycles.

The statistical records of the past show that there is no condition or series of conditions which may be termed normal, for the world is changing constantly, and what might be considered normal at one time will be far from normal at another. It is not possible to gauge the duration of a business cycle, for while they *tend* to recur at certain intervals, they *never* reappear after exactly the same interval of time. While the future can never be exactly the same as the past, since at every step there is a new accumulation of factors with which to deal, the past is the only basis upon which we can judge the future. So far as the future is concerned, then, we are suspended in mid-air, not quite sure in which direction we are heading, but certain that the immediate future will not be so radically different from the recent past as to render it impossible to recognize certain factors with which we have had previous dealings.

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